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The Australasian MANUFACTURER

SERVING ALL INDUSTRY

XXXV — No. 1820.

Registered at the G.P.O., Sydney, for
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Saturday, February 17, 1951.

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AFTER BUSINESS HOURS

The Convivial Spirit

By Ronald Creasey.

The views expressed in articles published in this section are those of the contributors and not necessarily those of "The Australasian Manufacturer." They are selected for their interest value, whether controversial or not, and the comments of readers on the subject discussed are always welcomed by the Editor.

I'VE swallowed the brown brew in many lands. In some, I've begrudged the price; in others I've felt mean for not paying more. Usually, both liquor and cost are right. Shall we go on a world-wide binge?

Let's break our ducks in England and drink a passage home. Long summer evenings are glorious when one visits country inns, some centuries old, with patriarchal customers whose birth dates might almost coincide with the dates on which their haunts began trading, putting the breath of life into cartoons. We drink it warm here. Real summer heat is short lived; refrigeration unjustified. The brews are choice, that's what mat-

ters; that and the company met: the squire; the artisan; the yokel. Oldsters who never saw a town. Mothers and daughters. All prop the bar. Opposite, in sensibly convenient propinquity, stands the village church. The country innkeeper closes to attend church, and returns to open joined by the parson and his flock.

Winter brings the snugness the heart desires: roaring fires; inter-pub. dart matches drawing cricket test keenness; lusty songsters around a piano; a sleeping dog awaiting the quenching of its master's thirst, the remains of a biscuit beside it.

Five minutes before the hour of tea, an ox-like voice bellows:

"Order last drinks." Satisfied with a leisurely evening's drinking, the crowd disperses—sober.

We'll slip over to Sweden. What a system! No rush or bustle. Protruding from walls of bars were taps. Taking a glass from a shelf, one inserted a coin, and, presto, the glass filled. Visualise our Saturday noonday crush. Pushed and shoved, hustled and cursed, by others who thirst, slow service sends one home in querulous instead of rollicking mood. Sweden's auxiliary to counter service would put a big warm glow into the beery heart, and none would sell his thirst for fifty quid—when the wife's on holiday and the rolling pin's lying dormant.

No rude barmaids, surly waiters, or tips. But, there's a snag. How a man who's had a couple loves to see those sparkling blue planets neath skies of blonde hair pushing foaming schooners towards him in his lesser stardom.

With the world's most sensible system, Sweden succumbed to prohibitionists!

Denmark will give us a tasty snack—beer bread. Two bottles of pale ale are its chief ingredients. So it's true. Beer is food as well as drink.

Pre-war Germany was a toper's joy. Bars were open day and night, and the lager was such as one would expect to lap up in paradise. I recall an early stroll to work up a breakfast appetite. Strains of music at 6 a.m. drew me like a magnet to a cafe-pub. A five piece orchestra; dancers in action from overnight; non-dancers singing; hikers breakfasting on ham and eggs washed down with beer, met my line of vision. On all night benders, customers took their glasses outside in the early morning while the place was rapidly cleaned. Then inside to start the new day. A superb set-up for the saintly knights of Bacchus.

Heidelberg University students learned to quaff beer if they learned nothing else. It was a point of honour to imbibe a minimum quota each night. Beginners were expected to tickle the throat until able to receive the test of manhood.

Despite the viewpoint of Mrs. Grundy, Jerry is quite a healthy lad.

That country produced great masters of the arts. Most of them loved their little drop. Who doesn't find inspiration in the luscious brew? It's a stimulant to the creative instinct.

Holland's next door and serves a tempting glass. Babes in arms enter with ma and pa and sip from the parental glass. Reared on it, the Dutch are a husky crowd of big built men; and the girls—they're radiant.

An ocean hop. First stop Las Palmas in the sunny Canary Isles. Coster-like barrows serve drinks in the streets at a penny (pre-war anyway) a glass. Any currency was accepted. Change from paper money would represent the United Nations, and some of the dis-united. How united we all might be if beer was free. Imagine street water-fountains spouting peacemaking fluid. The world's troubles solved by forcing, not an aggressive neighbour's head in a horse trough, but his lips overlong to the fountain, for none feels argumentative after a Bacchanalian bout. Toss-pots are unwittingly the world's greatest peacemakers. There's much to be said too, for the convivial spirit which receives its birth in middys.

Nearby, the Azores. In winter the glass is filled and placed on a stove before being served to the customer.

Mexico is warmer. A trip to the local and back to the ship with a huge carton of small bottles. So cheap, it must be paradise. But a sample taste shows us a real hell's brew. Not the stuff which needs a fire brigade to extinguish the inner man, but anticlimatic liquid on a par with the stuff which trickles out when the cabbages are strained; apt for a punishment for wrongdoers on ration day in Hades.

Aruba in the Netherlands West Indies has a marine club. Let's join a farewell party to an exodus of mariners whose contracts have expired. Never was conviviality greater than that infused into the departing ones and their hosts. The place packed; stewards double banked to cope with trade; glasses treble banked for many. Nervous tingling with excitement precedes

(Turn to page 42.)

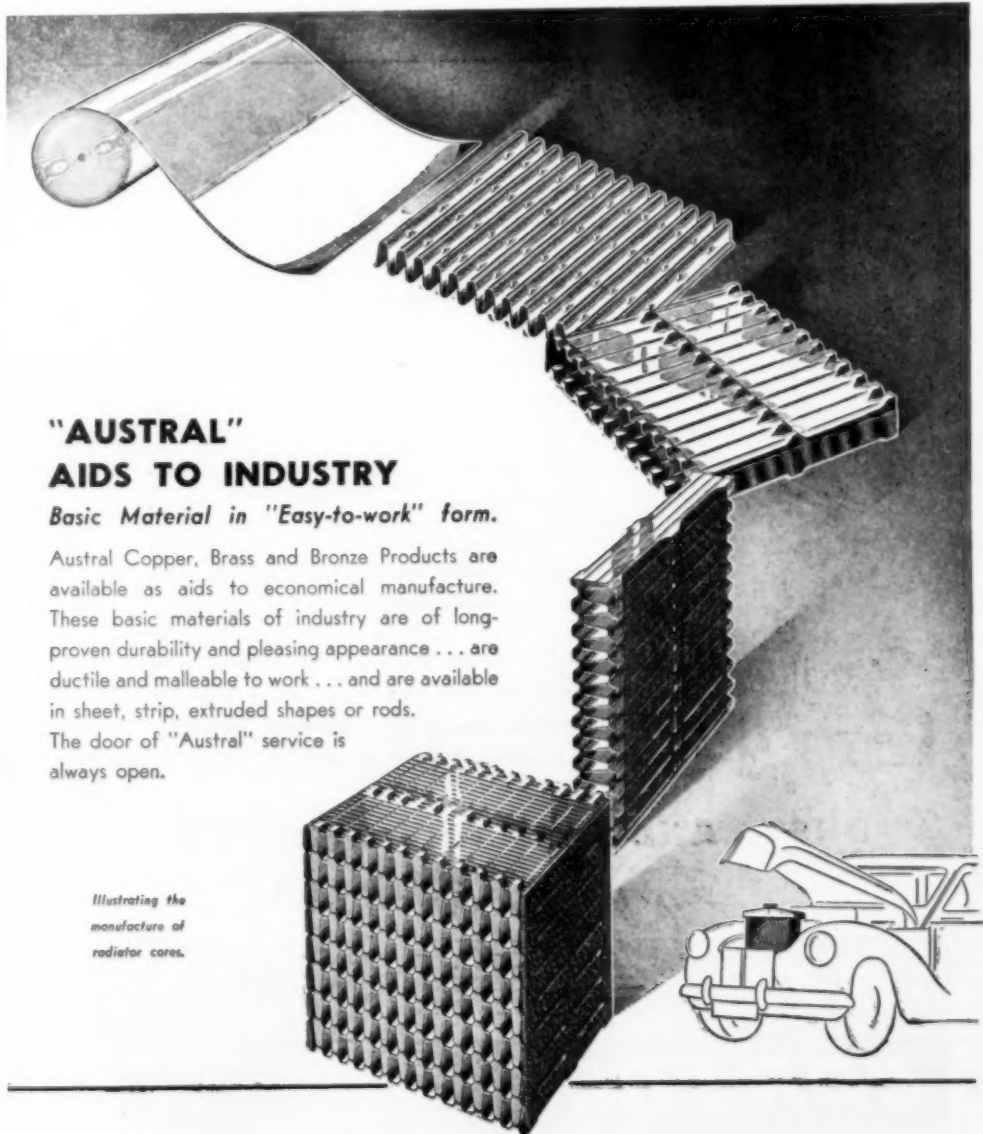
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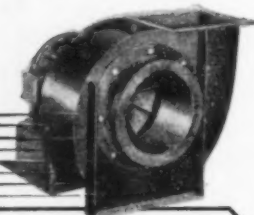
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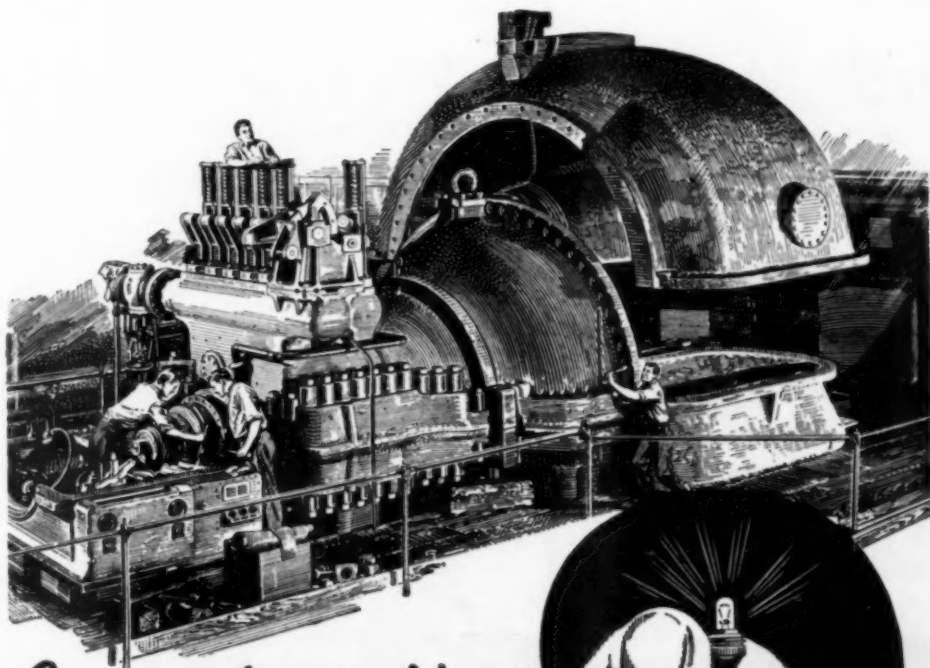
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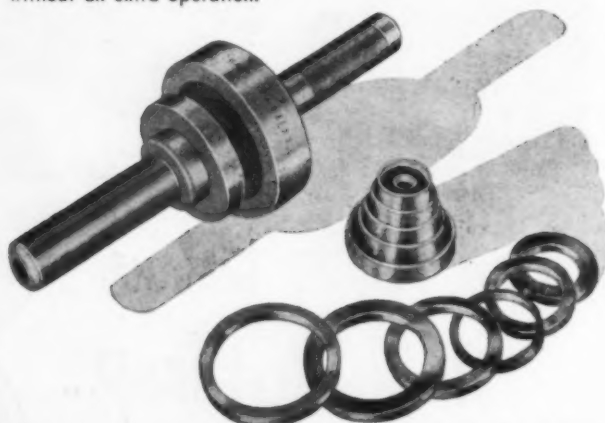


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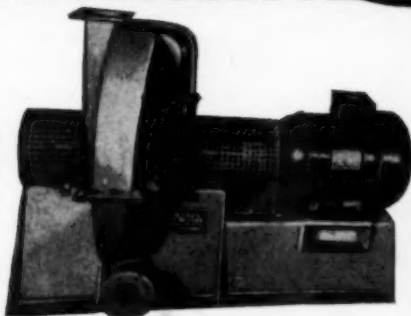
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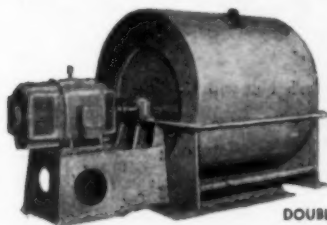
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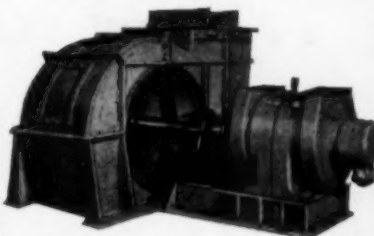
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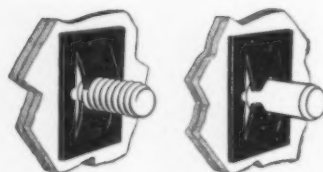
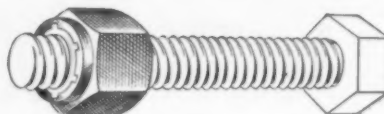
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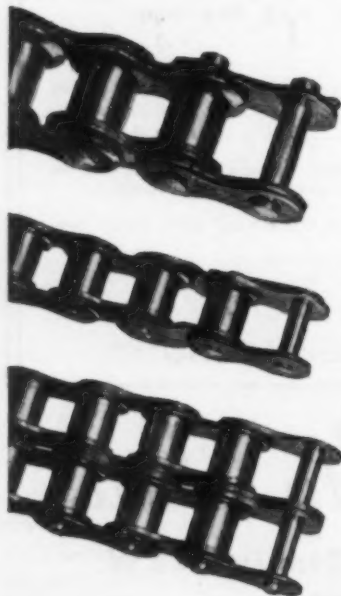
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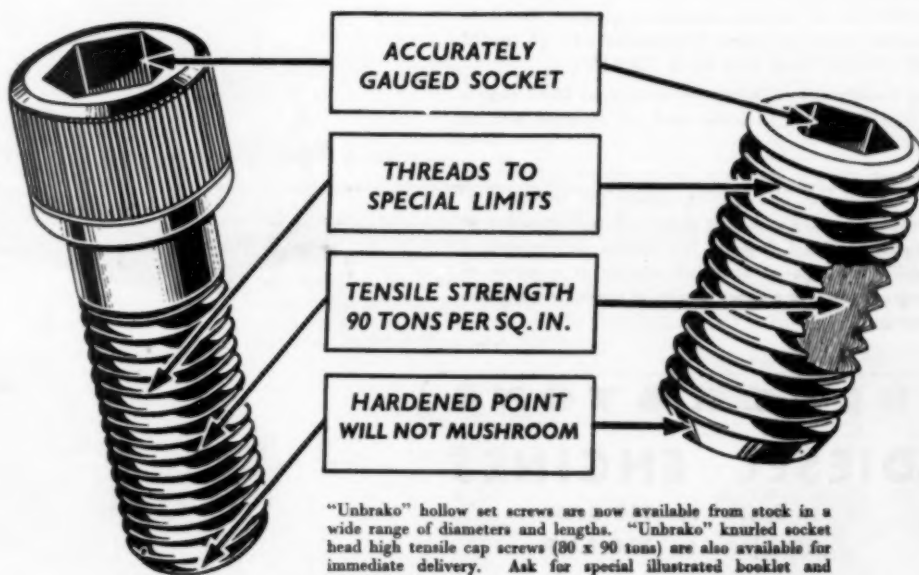
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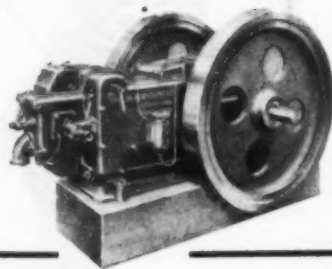
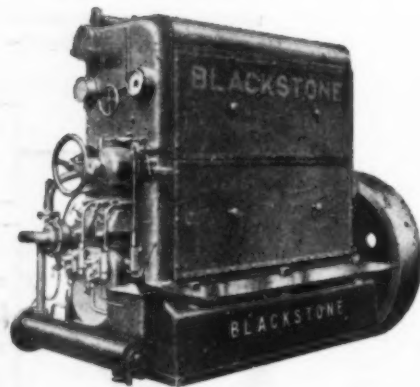
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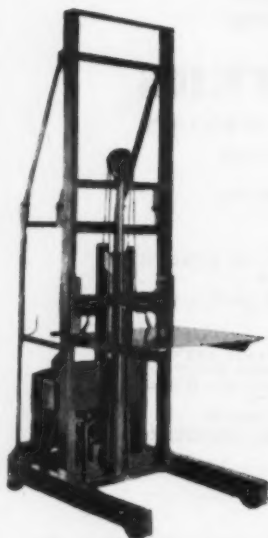
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The "OFFSIDER" will move anything EFFICIENTLY, ECONOMICALLY and with a MINIMUM OF EFFORT.

The "OFFSIDER" hand-operated braking winch makes lifting 300 lb. loads easy. After load has been moved into place it is lowered gently to the floor at controlled speed simply by reversing the lifting handle. The automatic brake will hold loads at any position or height.

The "OFFSIDER" lifts loads too heavy for manual labour and moves same into tight places where heavy lifting trucks cannot go.

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The "OFFSIDER" is perfectly balanced and sturdily built and is fitted with 8in. x 2in. "ZIPPEE" Rubber Wheels.

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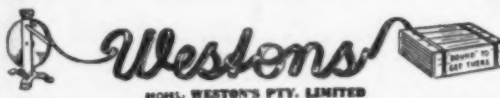


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TRUCK
REG. PAT. 24674/48

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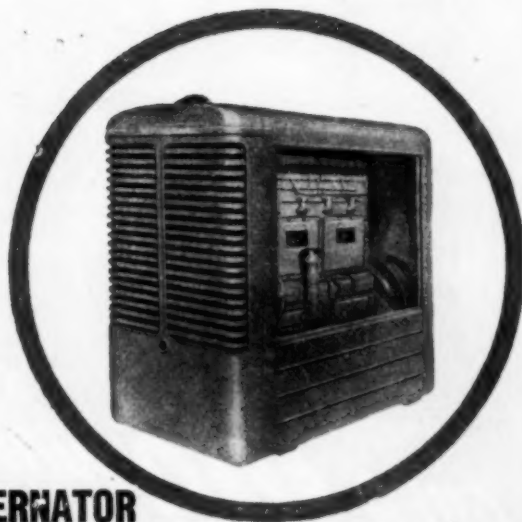
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PAGE NINETEEN

FEBRUARY 17, 1951.



Short-Sighted Tactics

Intensify Present Manpower Difficulties

Australia continues to be, as she has been for some years past, in the unique position of having more jobs than she has workers to fill them. Towards the end of 1950, for example, official estimates placed Australia's unfilled jobs at the 125,500 mark. This inevitably has spelt a more or less wild scramble to secure the services of such workers as are offering, a scramble which has resulted in the adoption of tactics which, ultimately, cannot fail to have serious repercussions, not only on the industrial situation, but also on the entire national economy.

COMMONEST method of securing the additional labour force required is the payment of wages above award rates. With this bait, thousands of workers each year are enticed from the old job to the new.

The nation has not had to wait long to pay the piper in this regard. For it will be recalled that His Honor, Judge Foster, when commenting on the granting of the £1 per week increase in the basic wage by the Commonwealth Arbitration Court in October last, made it very plain that the Court based its judgment on what industry could pay by what, in actual fact, industry already was paying. The majority, that is to say, were forced to pay a rate of pay which had been fixed by the minority—a rate fixed in defiance of the ruling of the Arbitration Court. As Judge Foster put it: "As there is good evidence that industry is sustaining and has sustained these actual higher levels, it is safe for the Court to prescribe a sum as a basic wage that would give legal sanction to existing actual rates." There is overwhelming evidence, moreover, that these higher rates are used consistently by the unions to secure from the Arbitration Court increases either in wages or in margins.

Now a new menace has entered the industrial arena.

This is the offering of what can only be described as fantastic inducements to attract workers to individual enterprises.

Perhaps the most glaring and unquestionably the most publicised of such inducements was that offered by a New South Wales firm making radios. This was a specially organised fortnight's motor coach holiday to Brisbane for a number of its junior workers. The whole scheme was planned on luxury lines—the lads put up at first-class hotels; had special menus; motored to the beauty spots and the bathing beaches; and, in addition, were handed £3 each to spend during the trip.

The project developed along something like these lines. The management was experiencing extreme difficulty in recruiting young workers. Advertisements, though offering good wages and good conditions, were completely devoid of results. One of the executives, determin-

ing that a new approach was necessary, tried the expedient of offering a free holiday at the conclusion of one year's service. The magnet was highly effective. For no fewer than one hundred and fifty boys responded to the first advertisement inserted under the new plan, each declaring that it was the offer of a free holiday which had interested him.

Before the year's end, however, many of the boys had left, falling victims to the £6 to £7 per week baits held out by other undertakings. Those who stayed got the promised holiday and, obviously, enjoyed it to the hilt.

Throughout large sections of the industrial field, happenings of this character, though differing in detail yet agreeing in principle, are becoming more or less commonplace. It is recorded, for instance, that one enterprise is offering its messenger boys free bicycles; another free tuition in the operation of accounting machines; while yet others offer lessons in languages for those interested in such subjects; in millinery for its girl operatives; and in physical culture for all its workpeople.

Here, it may well be asked, whither is all this leading and where is it likely to end?

The whole issue should, indeed, cause industrialists seriously to ponder. For it must be obvious to even the least far-seeing that tactics of this nature, far from easing the labour position, will only add immeasurably to its complexity.

Is it not only highly probable, but extremely likely, that just as the above-award rates offered by the few raised the wage-rate for the many, so will the fantastic labour inducements of the minority be forced upon the majority?

And to what purpose? Only to make confusion worse confounded.

"The Manufacturer" has advocated from its inception that Australian industrialists should install the latest plant and equipment; that they should employ the latest manufacturing techniques; that they should provide the best possible working conditions; that they should initiate

incentive schemes calculated to meet the needs of individual enterprises. It has at the same time, however, been equally consistent in its advocacy that manufacturers should be rigid in their adherence to awards and conditions as fixed by the Commonwealth Arbitration Court. For it realises to the full the dangers inherent in any other course of action.

The position could well get out of hand unless manufacturers' organisations impress upon their members the dangers of the crises they are precipitating. It was well, therefore, that the Director of the New South Wales Chamber of Manufactures, Mr. C. R. Hall, should have declared recently: "If any employer believes that by offering fantastic

conditions he is achieving a stable and permanent labour force he will wake up one morning to find his competitor has gone one better. There is no logic or sense in this mad competition for labour and it has no reasonable basis. Taking the long-term view, the workers themselves should realise the hollowness of the situation."

None would deny that the existing manpower shortage is a constant worry to industrialists. The utmost care must be taken, however, to ensure that expedients employed to overcome one difficulty do not bring in their train difficulties and complexities of far more baffling and complex a character than the ill they set out to cure.

Pithy Jottings of Industry and Industrialists

NYLON PRODUCTION.

It was recorded in these columns in December last that Monsanto Chemicals (Australia) Ltd., had announced it was planning the local manufacture of nylon yarn. The editorial should have been to the effect that nylon yarn is to be produced in the United States by the Chemstrand Corporation, which is jointly owned by American Viscose Corporation and Monsanto Chemical Company, parent of the Australian offshoot. Production will be by a licensing agreement under negotiation with the Du Pont Company. This, we understand, will mark the first manufacture of nylon yarn in America by other than the Du Pont Organisation.

HAT EXECUTIVE GOES ABROAD.

Mr. Frank D. Bowden, who has been associated with R. C. Henderson Limited, hat manufacturers, for several years as Mill Manager, flew to the U.S.A. this week.

Mr. Bowden will study the latest methods used in the manufacture of men's and women's felt hats in leading American and United Kingdom mills.

The Directors of R. C. Henderson Limited feel that the information gained by Mr. Bowden whilst overseas, will enable them to improve quality and increase production to meet the ever-growing demands for Henderson hats.

Mr. Bowden will be absent approximately four months.

AUSTRALIAN "SKYLIFT" FORK LIFT TRUCK AT EXHIBITION.

Visitors to the Centenary and Jubilee Exhibition being held at the Melbourne Exhibition Buildings from March 21st to April 7th, should not miss the opportunity of seeing the first 4,000 lbs. capacity "Skylift" battery-operated Fork Lift Truck manufactured in Australia, under licence to the American Automotive Transportation Company, which is being displayed and demonstrated by Mechanical Handling Ltd. at Stand No. 61.

N.S.W. CHAMBER OF MANUFACTURES URGES ACTION IN COAL CRISIS.

In view of the serious production losses, consequent on the drastic power rationing following the stoppages of work on the coal fields, it was eminently satisfactory that the President of the New South Wales Chamber of Manufactures, Mr. R. J. Webster, should have sent a telegram to the Acting Prime Minister, Mr. Fadden, urging that if the Commonwealth Government has not sufficient authority to deal vigorously with the coal crisis, it should ask the people for the power, even if it means a dissolution of Parliament. A copy of the telegram was sent to the N.S.W. Premier, Mr. McGirr, asking his full co-operation in the matter.

As the Chamber represents employers with 350,000 work-people on their pay rolls, it is earnestly to be hoped that Mr. Fadden will treat the question as one of urgency.

MANAGEMENT TALKS IN BUSINESS ESTABLISHMENTS.

The Melbourne Technical College has devised an excellent medium for the arousing of interest in and increasing knowledge of the principles of industrial management. This is the giving of a series of talks by management experts in individual organisations. The bringing of the speakers to the factories means that executives can acquaint themselves with the latest developments in this field without having to be absent from their offices for long periods. When the scheme is more widely known it is certain to be taken up eagerly by go-ahead industrialists. "The Manufacturer" would like to see its extension to other States.

FAST TEXTILE DEVELOPMENTS PROPOSED.

Mr. W. S. Kattenburg, managing director of the English section of the combine Hollandia-Kattenburg, textile manufacturers, said on his recent arrival in Australia that a European combine plans to bring to Australia a complete textile manufacturing unit. "We have found," he added, "that

you cannot successfully establish in Australia a basic industry which requires machinery and skilled labour. Therefore we propose to shift a section of our industry to Australia. The working unit will come from England and Holland. The industry, when established, could manufacture finished textile products for Australia and for export. Australia has a big export potentiality. Certain markets, mainly Far Eastern, could be covered from here instead of from England and Holland." Mr. Kattenburg went on to record the interesting fact that the success of an associate company, Anthony Squires Ltd., which established a factory at St. Marys, N.S.W., two and a half years ago, inspired the new textile manufacturing scheme.

"PREFAB" FACTORY FOR LEWIS BERGER PTY. LTD.

If permission for its importation is forthcoming from the Federal Government, Australia will soon witness the arrival of a prefabricated factory which, when erected, will cover nearly five acres. This novel and interesting project will be executed by Lewis Berger Pty. Ltd., world-renowned manufacturers of paints and varnishes, Rhodes, New South Wales. Managing director of the organisation, Mr. W. Darby, said recently: "The factory will cost about £250,000 to import and erect. We bought eight acres of land at Coburg, near Melbourne, last year, to establish a Victorian branch there. Because of housing priorities we could not obtain permission to buy building materials in Australia. We had to try to have the factory prefabricated in England. It is ready for shipment and could be erected in about nine weeks."

Developments will be watched with keen interest.

PLANS FOR ELECTRONIC DEVELOPMENTS.

Mr. C. O. Stanley, chairman and managing director of Pye Ltd., Cambridge, England, leading British radio and television equipment manufacturers, who is on a visit to Australia, said the main object of his trip is to ensure that, in the event of war, as many as possible of the "Pye" electronic devices for the Services shall be

made in Australia. This would be done in co-operation with Electronic Industries Ltd., Melbourne, with whom Pye Ltd. have a manufacturing agreement. Mr. Stanley recorded that in the last war, Pye developed for the British Government the first air-borne radar, interceptor of hostile aircraft; the first seaborne interception of the same type; the first radar gun control; the first night fighter radar ground control equipment; and the proximity fuse which did such devastating work among the German guided missiles over England. "To-day," he concluded, "the nation best equipped for atomic warfare and defence against guided missiles, is the nation with the biggest and best electronic industry—including television."

ADDITIONAL TINPLATE FOR LOCAL INDUSTRY.

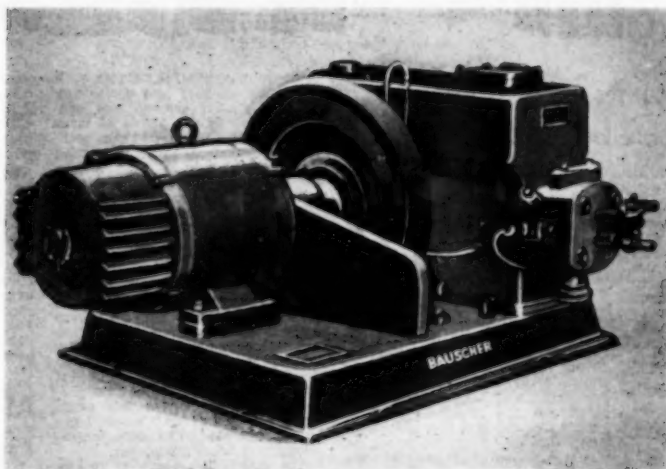
Mr. H. G. John, who recently arrived from Britain to take up the post of director and general manager of Richard Thomas, Baldwins and Gollin Pty. Ltd., tinplate distributors and merchants, predicted that Australia will benefit from the increased production of tinplate, steel sheets, strip, etc., that will come from the vast new projects in Wales. "A new company, RTSC Export Ltd.," he added, "has been formed by Richard Thomas and Baldwins Ltd. and the Steel Company of Wales Ltd. to handle the export end. The Australian company will distribute in the Commonwealth and New Zealand. Australia requires about 120,000 tons of tinplate a year, mainly for the food processing industry, but she does not yet manufacture it."

At no distant date, however, Australia's vast tinplate mill being established by the Broken Hill Pty. will come into operation at Port Kembla. On that day, Australia will have taken one of her most important steps towards industrial self-sufficiency.

B.H.A.S. MAN FOR ALUMINIUM JOB.

Mr. A. J. Keast has resigned the position of general manager of B.H.A.S. at Port Pirie and has accepted the position of general manager of the Australian Aluminium Production Commission.

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Around & About the FACTORY



A digest of new factory and plant construction, additions, alterations and improvements, and operating news of Australian industry.

Silentbloc comes to Australia

New Company to Manufacture and Provide Technical
Advisory Service on Vibration Problems

Silentbloc (Australia) Pty. Ltd. has been formed jointly by Silentbloc Limited, England, and Leggett Products Limited, of Melbourne, to provide the same service as the English company, in addition to manufacturing Silentbloc products in Australia. The office and works are situated at Doonside Street, Richmond, Melbourne. Telephone JA3121. The managing director is



Mr. P. J. de Steiger, Technical Manager for Silentbloc in Australia.

Mr. R. M. Fitzpatrick, B.Sc., one of the foremost rubber technologists in Australia. The technical manager, who will handle all initial enquiries, is Mr. P. J. de Steiger, B.E.E., B.Mech. E. who has recently spent six months with the Silentbloc organisations in England and America.

One of the main aims of the Silentbloc organisation is to maintain a technical advisory service to industry on vibration and allied problems and to assist in the selection of suitable anti-vibration devices. It should be particularly noted that an incorrect application may well aggravate vibration rather than alleviate it, with the risk, not only of increasing discomfort and fatigue, but of causing actual breakage with possible personal injury and plant hold-up.

Silentbloc incorporates three distinct types of product—Flexible

Oscillatory Bearings, Anti-Vibration Mountings, and Flexible Couplings, all of which employ rubber as the flexing medium, eliminating sliding friction with its consequent wear, noise, vibration, lubrication problems, and necessity for accurate machining. Although their construction is a combination of rubber and metal, in general they do not rely on a chemical bond to transmit the load. The rubber is pre-compressed between the metal parts and the resultant pressure gives a high friction grip and at the same time very much increases the load-carrying capacity of the rubber.

The most common application of the bearings is in car spring shackles, but they are also used in

any type of oscillating linkage, such as in the hangers and connecting rods of shaker screens and conveyors, and in the pivots of lever motions. In addition to these oscillatory applications they can be used as a cushion for rotary bearings, reducing noise, vibration and shock, and taking up possible misalignment in the bearing housings. When incorporated in a rotary drive they will also absorb torsional vibrations and shock.

The mountings are used to reduce the transmission of vibration either away from or into a piece of equipment, and are commonly applied to power units, such as internal combustion engines, electric motors and generating sets; to items of plant, such as sheet metal presses, compressors and food processing equipment; to line shaft supports; to bus and coach body mountings; and to delicate instruments and radio equipment.

The couplings are applied to any power drive, taking up misalignment and reducing noise and vibration, particularly that due to torsional oscillation and shock.

surface of the drum a smooth cylinder. The join is sealed with 2 in. wide paper tape and the lid will remain on through the toughest possible handling or jolting.

These cardboard cylindrical containers are being made in Australia at Bonar Street, Arncliffe, N.S.W., by this firm under licence from an American organisation. Production began 2½ years ago. The firm custom builds containers to the purchaser's requirements, suiting the drum to the product. There is no shortage of raw material and so, apart from their economy, these containers have the additional advantage of ready supply.

Moulds for Industry

Intricate and Accurate Work
for the Rubber and Plastics
Trades

Bireme Engineering Co., of 120 Church Street, Richmond, Victoria, is an interesting concern. Interesting in its concentration on the manufacture of rubber moulds for many industrial and commercial purposes.

Its main objective is in rubber moulds for hydraulic brakes on motor vehicles and dust covers of the concertina type. But the firm's range of activities do not end there. An inspection of the factory showed the making of many moulds for manufacturers of plastic products is another activity that covers a wide range of requirements.

The factory is well equipped to cope with the diversity of work and includes milling machines, lathes and drills of modern design. And when there is a job that necessitates a new tool, the firm sets to work and makes it. In this regard the company has made a large number of special tools to fulfill its clients' orders. It has gained quite a reputation for this aspect of the engineering trade.

The firm has many calls on its ingenuity. For instance, it has also made moulds for golf and tennis balls and moulds for a

Bitumen Contained in Cardboard

All Purpose Cardboard Drums Made in Australia

It seems difficult to believe that anyone would deliberately pour hot molten bitumen into a cardboard container and not expect an accident. Yet Australian oil companies do this daily and find the cardboard drums highly satisfactory containers.

The reason why such an apparently hazardous task is successful is given by Mr. Richard H. Brewer, general manager of Plyfiber Ltd., manufacturers of the drums, and is so simple as to be painfully obvious—the bitumen solidifies before it has time to penetrate through the cardboard. In fact, by applying a special light spray to the interior of the cardboard drum, Plyfiber Ltd. can guarantee that the bitumen will not even adhere to the drum and will come away cleanly.

When it is desired to use the bitumen, it is simply a matter of taking the drum from the contents. The container is slit with a knife and stripped away.

The company can apply protective sprays to make the containers suitable for all kinds of products such as wax, soap, resin, powdered goods, foodstuffs, and even grease—the latter requiring an inner drum coating of poly-plastic.

The drums are made from pure kraft "Fourdrinier" board, specially made for Plyfiber Ltd. by Australian Paper Mills. The Mullens Test applied to the board used in the largest size drums showed that it has a strength of 700 lb. per square inch. The board is wire attached to make the cylinder and reinforced at the bottom. Lids are provided.

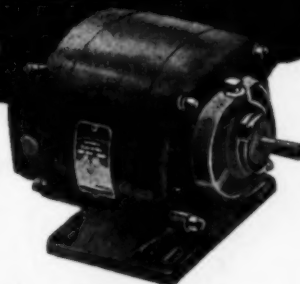
Most recently developed container at the factory is a drum 16 in. in diameter, 27 in. tall, having a capacity of 3.1 cubic feet.

The lid has been made snug fitting by recessing several inches of the cardboard at the top of the drum to half thickness. The sides of the tightly fitting lid come down over the recessed portion and, being also half thickness, leave the outer

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FLEXIBLE COUPLINGS — For all power drives.

Our Technical Manager will welcome your enquiries on vibration and allied problems. A copy of the comprehensive SILENTBLOC catalogue is available on request.

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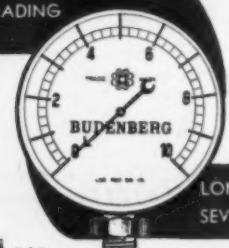
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Horizontal circle reading to single degrees, extra £2/10/-, plus tax.

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42 HUNTER ST. SYDNEY. BW 8631

SURVEYING, NAUTICAL INDUSTRIAL & OPTICAL INSTRUMENTS



(Continued from page 22.)

company engaged in the manufacture of sweets. The moulds for the sweets were peculiar in shape and, made in brass, called for a high degree of precision and uniformity. Among the tools Bireme has made for "outside" firms, are small and intricate ones for the plastic trade, used mainly for assembly purposes. The plastic trade has also had the company making injection equipment. Most of these have been designed by

the company while others have been constructed to designs submitted by its clients.

Yet another example of the extent of designs of moulds is given by a soft plastic mould for a toy sleeping doll's head. This was a rather intricate mould; but it was turned out to give the doll life-like features.

Altogether, the work at the factory seems to be a never-ending source of change and variable work that must tend to detract much from dull routine.

Tiles by the Sheet

Plastic Surface Withstands Chemical Action

The shortage of conventional materials during the post-war years stimulated the marketing of many alternative products, which, given the opportunity, soon proved to be far better than merely "substitute." An article introduced in this way and now competing on an equal basis with all others in the field is a modern plastic tile wall-board bearing the trade name of "Fact-O-Tile."

These are hardboard sheets (such as Masonite or C.S.R. hardboard) grooved in 4 in. or 6 in. squares to give the appearance of wall tiles. The sheets are available in sizes from 6 ft. x 4 ft. to 8 ft. x 4 ft. 6 in. The surface is laid on by a process which is a highly specialised and a patented one, having been perfected over a number of years by collaboration between Australian and American scientists.

Broadly, however, a primer coat is sprayed on the board, followed by a high-grade synthetic colour base, over which a plastic surface is sprayed. The plastic produces

a hard, lustrous surface, which has been subjected to independent tests by such authorities as C.S.I.R.O. and found to be resistant to chemicals, acids, and alkalis found in normal household use. An extract from the C.S.I.R.O. report states: "Twenty-four hours' direct application of caustic soda at full household strength left the surface in perfect condition, there being no reaction."

As well as scientific tests, observation has been made of the wearing ability of the plastic surface wherever the tile boards have received harder than normal use.

Installed in Elvy's Butchery, Sydney, the tiles were examined after nine months' use and discovered to show no sign of deterioration. This, in spite of the fact that the tiles had been scrubbed down each night with brush and sand soap in contradiction to the maker's warning that this should not be done. Abrasives could damage the plastic surface, which should be cleaned with a clean rag dampened

with kerosene and then polished.

The sheets are so simple to install that the task is one within the scope of a handy man, no special skill being needed. They can be cut with a hacksaw and planed and chiselled with carpenters' tools.

Wherever the sheets butt together a metal cover strip is used which is marketed under the name of Fact-O-Line. This is a specially made, extruded aluminium channel which supports the sheets in position, providing external and internal corner mouldings.

In order to erect the tile boards, the wall is first battened with 2 in. x 1 in. wooden strips on 18 in. centres. The moulding is then secured to the battens at the appropriate places—in corners, top and bottom and wherever sheets butt together—by 1 in. panel pins. A high quality mastic is smeared into the grooves and the tile board then slid into position. Further panel pins may be driven through the board, along the grooves, wherever additional support is required.

The tile board may be secured direct to concrete or plaster walls, providing the surface is level, by sticking with high grade adhesive.

The tiles are suitable for bathrooms, kitchens, or wherever a hard-wearing, waterproof wall is required.

They are made by the Factorite Corporation Pty. Ltd., Sydney and Brisbane, and distributed by hardware merchants and builders' suppliers.

N.S.W. AMENDS INDUSTRIAL ARBITRATION ACT.

Important amendments to the Industrial Arbitration Act were approved recently by the New South Wales Cabinet. Chief among these are the abolition of the 3/- margin in the basic wage between Sydney, Newcastle, Port Kembla, Wollongong, and the rest of the State; provision of tribunals to make awards up to £1,500 a year (present limit £1,000); provision for the recovery of wages up to twelve months after the termination of employment (present limit six months); amendments making sick pay universal in all awards and conferring on the Industrial Commission the right to take fresh evidence, at its discretion; on appeals; ensuring the powers of the Apprenticeship Commissioner to summon witnesses; and conferring on tribunals the right to demand proof of union secretaryship or union registration.

B.H.P. EXTENDS HOUSING SCHEME.

Latest development in the housing scheme of the Broken Hill Pty. Co. Ltd. at Whyalla, South Australia, is the payment by the company of a deposit on a Housing Trust home for a limited number of employees. This is an elaboration of their splendid employee home building plan under which approved employees are assisted with the design, construction, and purchase of homes in Whyalla, Iron Knob, and Iron Baron.

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YOU WANT TO KNOW . . . and the editors will gladly tell you . . . more about the inventions, materials, and processes mentioned on this page. Write to Box 1687, G.P.O., SYDNEY, enclosing a stamped, self-addressed envelope.

Riser Eliminates Damage to Narrow Fabrics

A new, all-aluminium high-speed riser for narrow-fabric finishing which automatically adjusts itself to different skein lengths and sudden tensions has been developed. The riser is said to eliminate breakage of even the frailest ribbons. Its highly polished rollers, running on sealed noiseless bearings, offer no drag and can be stopped by hand with complete safety at any speed. Fast starting and sudden stops create no problems, and there is practically no limit to blocking speed. Maintenance cost is negligible—no oiling or greasing of the new riser is required.

The riser is manufactured in two sizes. Model 1-A is designed for 100- or 200-yd. skeins of light narrow ribbon or seam-binding. Model 2-A is for heavier, bulkier skeins.

The 1-A model occupies only 11 x 18 in. of over-all floor space. The 2-A takes up 13 x 20 in., the extra inches being due to larger heads. The bases of either model require only 99 sq. in. of floor space.

These risers can be placed in a line only 2½ ft. apart, and thus save about a third of the space



Lower blocking costs and less employee fatigue are said to result from the ball-bearing rollers and lifetime lubrication of this new riser.

which is usually required by the old wooden type of riser. [2720].

Application of Magnetic Coolant Clarifiers

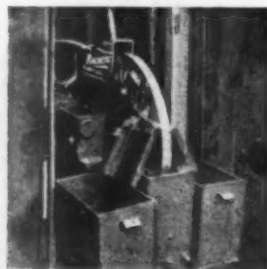
An interesting example of the application of the magnetic coolant clarifiers, for dealing with ferrous swarf, is afforded at works, where fifteen gear shaving machines have been fitted with this equipment. Particularly good results, it is stated, are being obtained, the effective removal of contamination having given greatly improved finish of the work and a marked increase in the life of the shaving cutters.

Moreover, since the finest ferrous particles suspended in the coolant are removed, the oxidising action which would result from their presence is reduced, and a substantial saving in coolant is effected. With regard to surface

finish of the work, it is pointed out that if a high standard is to be maintained the continuous removal of swarf from the coolant is essential. Even on a relatively light machining operation, such as centreless grinding, as much as 50 lb. of swarf can be produced during a single day.

The magnetic clarifiers are automatic in operation, and the small amount of servicing required can be undertaken while the machine is running, so that no production time is lost. The units are self-contained and only require to be connected to the mains, and inlet and outlet connections made for the coolant. The inlet connection comprises

merely an open pipe, which discharges into the clarifier casing. The clarifier can thus be built



Close-up view of the clarifier showing the containers into which the sludge is discharged.

into the machine or arranged alongside, as convenient.

On some of the machines, the clarifiers are totally enclosed in a

sheet steel housing, which can be swung aside to provide easy access. Operation of the equipment is very simple, the ferrous swarf being picked up by powerful permanent magnets carried on a slowly-rotating aluminium disc which is driven through a reduction gear by a 1/16-h.p. motor. The sludge is removed from each side of the disc by scrapers and deposited into containers, seen in the illustration, which can readily be removed for emptying. The cleaned coolant flows back to the machine by gravity.

The unit shown employs a single magnetic disc and is capable of dealing with 500 gal. of coolant per hour. Standard types of clarifiers are also made with two discs and three discs, and where a capacity greater than 1,500 gal. per hour is desired, equipment can be supplied to suit requirements.

The overall dimensions of the single-disc clarifier are 2 ft. high, 1 ft. 6 in. wide, and 2 ft. 4 in. long. All standard clarifiers are designed to operate from 400/440 volts, 3 phase, 50-cycle supply. [2721].

Tiny Rocket Motor

A so-called "microrocket" motor small enough to hold in your fist is helping chemical engineers develop fuels for full-size rocket-powered missiles.

This tiny liquid-fuel rocket motor is believed to be the smallest of its type in the world. By running on very small amounts of fuel and by eliminating the need for elaborate safety precautions, it makes possible experiments costing far less than full-scale tests.

Already the results have brought about a more complete understanding of rocket fuel combustion. Future work will continue to fill in this picture and is also expected to provide answers to specific rocket design problems.

The microrocket uses only two pounds of fuel in the one minute during which 12 tons would be

used in a rocket the size of a German V-2. The microrocket operates on exactly the same principle and with the same high efficiency as its largest prototypes—but on a greatly reduced scale.

Although built to use any liquid rocket fuels, the microrocket has to date been used chiefly with a combination of liquids which ignite spontaneously on contact. When they come together inside a rocket motor, the resulting flame makes a tremendous amount of heat and therefore power.

Though a toy in size, the microrocket is hardly a living-room plaything. On two pounds of fuel it runs for one minute, builds up more than 300 pounds of pressure inside the motor, shoots gas out its nozzle at a speed of about 5,000 miles per hour, more than

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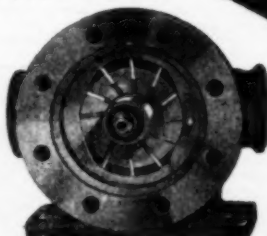
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21 times the velocity of sound at these conditions, and produces heat at the same rate as does a furnace big enough to heat an 8-room house.

Jets of the microrocket fuels, shot through 0.01-inch-diameter holes, come together inside the chamber which is only 1/2-inch in diameter. Heat is produced with the same efficiency as in full-size rockets.

It is reported that this experimental work on a reduced scale materially lessens the cost of fuel and other materials and reduces the safety precautions required. It becomes imperative when test-

ing new fuels which are scarce or difficult to prepare.

Recent studies have investigated rocket operation at simulated high altitudes, where low air pressure may be combined with low temperature. To date two questions have been answered:

1. When the liquids come together at low temperatures such as would be encountered at high altitudes, what can be done to make sure they will still fire to give a quick start? If combustion is delayed, fuel will accumulate inside the rocket engine and the resulting explosion, when the mixture does take hold may be enough to blow the engine apart.

2. An antifreeze must be added to the chemicals if the rocket is to be used at low temperatures; what compounds will best serve this purpose without affecting other performance operating characteristics?

To help answer these questions the microrocket—and its fuel—are refrigerated. Then as combustion gets under way the pressure developed inside the rocket motor cavity is continuously recorded.

At 40 degrees ignition may take many times as long as ordinary room temperatures. In a rocket to be launched at high altitude, this delay might be serious. The addition of certain chemicals to

the fuel mixture can reduce this ignition time.

The use of an antifreeze in one of the two fuel compounds also increases ignition time unless compensating changes in the formula are made.

Studies of the microrocket operating at low air pressures will be the next step in the programme. Because of the large quantities of gas generated by a rocket, making such tests with a large unit at low pressure would require gigantic vacuum pumps; hundreds or even thousands horsepower might be required to drive them.

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Eventually, microrocket operation at both low temperature and pressure will be investigated.

Earlier tests which evaluated the success of the microrocket were made at room temperatures, with special equipment to measure the rocket's power, the pressure inside the engine, and the heat generated for a given amount of fuel consumption.

In addition to its advantages in economy and ease of operation, the microrocket makes possible performance measurements of equal accuracy to those obtained with larger-scale testing, according to the engineers. Other instrumentation problems, too, are simplified. [2722].

An "Endless" Automatic Hack-Saw

The chief disadvantage of the usual type of hack-saw is that the thickness of material which can be sawn through at one operation is restricted by the hack-saw frame. In a new "endless" automatic hack-saw, produced by a London tool firm, the holder has been completely re-designed so that the frame may be locked in position for use as an ordinary hack-saw and, simply by loosening the locking screw, may be used for sawing through material of unlimited thickness. This is accomplished by a spring which operates to bring the cutting position of the blade in front of the casting.

Blade breakages are reduced to a minimum because the saw is supported in the front casing by three hardened steel balls. Unlike an ordinary hack-saw there are no fragile holding pins to become bent or fractured. An added advantage is that the return stroke is automatic—an enclosed spring returning the blade after every forward stroke. [2715].

Thickness Gauge Measures Non- Magnetic Coatings

The gauge we illustrate was originally developed to meet the demand for a light, simple and cheap gauge to measure the thick-

ness of non-magnetic coatings (such as paints or non-ferrous metals) on ferrous bases. Testing is non-destructive and the gauge can be applied to surface of any shape or curvature, providing always that it is vertical and perpendicular to the surface.



The thickness gauge for non-ferrous coatings on a ferrous base.

The instrument consists essentially of a special, light Alcomax magnet, which is attached to a spring and is contained within the pencil-like tube shown. A measurement is taken by resting the magnet on the test surface and then drawing away the body of the gauge, thus extending the spring. The amount of spring extension is observed on a scale and is, of course, proportional to the force required to withdraw the magnet. This force, in turn, decreases with the thickness of the non-ferrous layer separating the magnet from the ferrous base. A calibration curve to convert readings on the gauge to thickness of non-ferrous coating can, therefore, be readily prepared and one of these is supplied with each instrument.

The range of the gauges is from 0.002 to 0.010 in., with a mean accuracy of $\pm 15\%$. [2711].

Individual Driving Unit

Re-organisation for increased production often calls for belt-driven machines to be converted to independent motor drive, but

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INQUIRY DEPARTMENT
SEE PAGE 40

since the early days of power transmission the driving of pulleys with flat belts at close centres was regarded as impracticable. Individual driving units manufactured by a British firm utilise the principle of leverage with the control feature in the form of a combination tensioning and re-acting spring damper. The units ensure high, efficient, short centre drives with the minimum wear on machine bearings.

Other advantages claimed for these units are that breakdown delays are confined to individual machines instead of whole sections; rapid re-planning of machines and machine tools can be effected; savings can be made on belting renewals, mill-wrighting, lubrication and maintenance costs; and quick change of speed rattle with complete safety to the operator can be achieved.

The units are suitable for driving machines from one to ten horsepower and are designed so that any type of motor can be fitted. There are three model sizes which cover the general range of machines and machine tools. [2718].

D.C. Arc Welding Rectifier Equipment

A D.C. arc welding rectifier recently developed, is claimed to retain all the advantages of A.C. welding equipment, while eliminating the need for the oil-filled transformers and regulators used with A.C. installations, and also the maintenance required due to brush, commutator and bearing wear of D.C. welding generators.

The unit has no continuously rotating parts and requires no oil, thus reducing maintenance and fire risk to a minimum. A six-arm mercury arc rectifier bulb of the grid control type is incorporated. Three anodes, 1, 3, 5, are fed directly from the secondary of an air-cooled transformer, and three other anodes, 2, 4, 6, are supplied through the reactances. Only the grids associated with the first three anodes are used for grid control, by means of a phase-shifting device.

By turning the handwheel of this device, the instant of "firing" of anodes 1, 3, and 5, in each cycle of applied anode voltage, may be advanced, or retarded, so smoothly varying the average current carried by the anode arms 1, 3 and 5. As the firing is retarded, these arms will carry progressively less, and arms 2, 4 and 6 will carry progressively more of the total rectifier output. The converse takes place as the firing of the anodes is advanced.



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1. Take a sheet of pure copper (melting point 1,890° F.) a "Eutectic" aluminium welding rod (M.P. 950°-1150° F.) and companion flux.
2. Apply flux liberally to copper sheet, hold aluminium rod as shown and heat with torch — maintaining temperature of approx. 1,100° F.
3. A new, lower melting alloy is formed between the copper and the aluminium through "surface alloying." This new molten copper-aluminium alloy lowers the melting point of the copper plate and the aluminium rod. The rod can now be pushed straight through the copper — at 700° F. below the melting point of copper!



Welding torch and electrode

This experiment was conceived to illustrate in accelerated form, that metals "mingle" below their melting points . . . that "melting" and "surface alloying" do take place at exceptionally low heat . . . thus vividly explaining some of the reactions which take place in actual welding procedures employing Eutectic low temperature Welding Alloys.



Welding torch and electrode

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cause of "surface alloying," the process is definitely welding, even though bonds take place far below the fusion temperature of the base metal.



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This equipment has no mechanical or magnetic inertia, normally associated with rotating plant, so that the arc current and voltage follow immediately any change in arc condition and length, from short circuit to broken arc. This

stationary installation or as a mobile unit with wheeled chassis and draw-bar. Unit can be arranged to operate from any three-phase A.C. mains. Standard equipment is suitable for a 50-cycle supply over a range of 380 to 440-volt. [2719].

Meat Grinder Gives Crusher Idea

An overseas company built a portable crusher in 1944 that solved a problem that none of the crusher manufacturing companies were able to tackle successfully. Two of the crushers have now

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been in service for six years, handling a million tons per year, with a capacity of over 2,000 long tons per 8-hour shift. They reduce ton-size blocks of sulphur to 12 inches and also feed a conveyor system at the rate of 350 long tons per hour per machine.

At the company's works, liquid sulphur is pumped to two bin sites, and then cooled. The main conveyor is located between the two bins. On each side of this conveyor a travelling cross conveyor is moved across the 200-foot width of the bins as loading progresses. A portable 5-ton capacity hopper is mounted over the crusher-feeder. The hopper receives feed from a 2½-cubic yard bucket, and moves across the cross conveyor on rails as the shovel digs across the sulphur bin. From 1934 to 1944 lumps were caught on a grid with 12 x 18-inch openings, and two men broke the lumps of sulphur to conveyor size with picks. This was a costly and dangerous operation which suggested the use of a crusher. Most manufacturers shied away from a 350 ton per hour portable crusher, and those who tried to work out something came up with more weight than the conveyor trusses could stand.

One day in 1943, it was noticed that sulphur samples were being crushed by a meat grinder, and this observation gave birth to the successful crusher. This crusher consists of a screw operating in a trough welded to the bottom of a hopper. The screw acts as a feeder to the conveyor belt, thus eliminating the usual pan feeder. Lumps too large to settle into the trough are broken off at the bottom by the screw ribbon until they settle on the screw shaft. Then they are carried forward to the front edge of the hopper, where teeth attached to the sides of the frame split the chunks as the ribbon of the screw forces the chunks against the teeth.

The shaft of the screw is 6 inches in diameter. Two ribbons of boiler plate are welded to the shaft. The large ribbon is of 11-inch plate and bent to make a diameter of 30 inches. The small ribbon is 18 inches in diameter and made of 3-inch plate. The ribbon extends along 4 feet of the shaft. The screw turns at 15 revolutions per minute, is driven by a 30 horse-power 1,200 revolutions per minute motor, equipped with 20-inch fly wheel, and is direct connected to a 325:1 reducing gear which is connected by a sprocket and chain drive to the shaft. Originally only the larger ribbon was used. Maintenance costs have been negligible. The crusher, including hopper, drive mechanism, and supporting structure for travelling over the conveyor belt weighs 22,000 pounds. [2716]

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Designers have long wished for an elastic member having constant or decreasing spring force with increased deflection. A new spring device introduced in the United States claims this property among its characteristics.

Briefly, the mechanism is a tight coil of flat material which is progressively unwound throughout its range of action, as shown diagrammatically in Fig. 1. The material is pre-stressed in manufacture so that it possesses a strong natural curvature, and force must be used to straighten it.

THE device is distinguished from ordinary springs in that the elastic characteristic of each increment or length is used in sequence from one end to the other, rather than all at once.

In use, either the free outer end of the coil may be pulled, as at a, b and c in Fig. 2, the unwound coil being free to rotate about its natural axis, or the opposite ends of the spring may both be coiled about shafts, spools, spindles, pins or drums, as at d and e. In these latter applications the opposing forces are torques.

Throughout its entire length the device is so highly pre-stressed that when it forms a natural coil the turns lie tightly upon each other and the resultant coil is solid. The coiling torque, which opposes the uncoiling pull, is developed only by that section of the spring that is being straightened as it is drawn off the tight coil. This working region at any instant is indicated by zone x, Fig. 1 and 2.

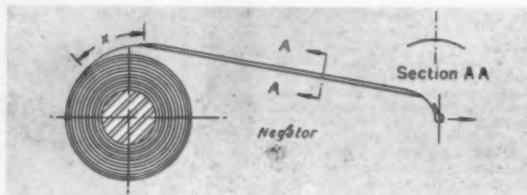


Fig. 1. Negative spring is a tight coil of flat material which is progressively unwound throughout its range of action. Material is pre-stressed in manufacture so that it has natural curvature and requires force to straighten it.

It will be understood how this spring can have a flat, a receding or a rising force-deflection characteristic if one imagines the coil cut into many incremental lengths.

At the top of Fig. 3 are shown diagrammatically three different types of springs that have been cut into incremental lengths. Each increment is assuming its relaxed

shape with zero stored energy, and each takes its natural radius of curvature.

FORCE-DEFLECTION CURVES

The spring shown at F has been pre-stressed evenly along its full length, so that each incremental length has the same natural radius of curvature. Accordingly, the

force-deflection curve is horizontal, as illustrated.

The spring shown at G has been so pre-stressed that the right-hand end, comprising the first incremental lengths to be straightened, possesses a natural radius of curvature larger than that of the left-hand end. Accordingly, a rising force-deflection curve is obtained.

Finally, the spring shown at H is such that the first part to be straightened, the right-hand end, possesses a smaller natural radius of curvature than the last part to be straightened. Therefore, a falling force-deflection curve—a negative gradient—is obtained.

Thus it can be seen that the different elastic characteristics of these three springs lie in the work required to straighten the incremental lengths in sequence as they pass through the zone x during uncoiling.

Obviously, the coil radius from which any incremental length of the negative spring is uncoiled (Turn to page 37.)

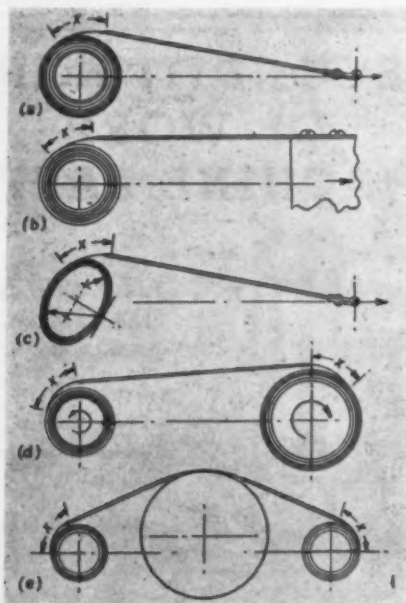


Fig. 2. Arrangements of the negative spring for various applications. The free outer end of the spring may be pulled as at (a), (b) and (c), or opposite ends may be coiled on shafts or drums, as at (d) and (e).

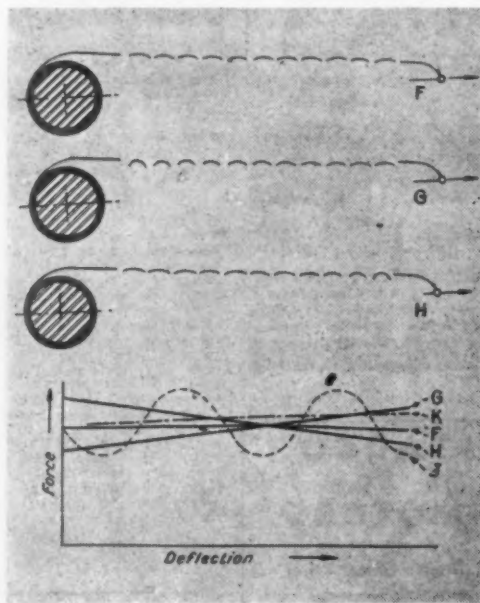
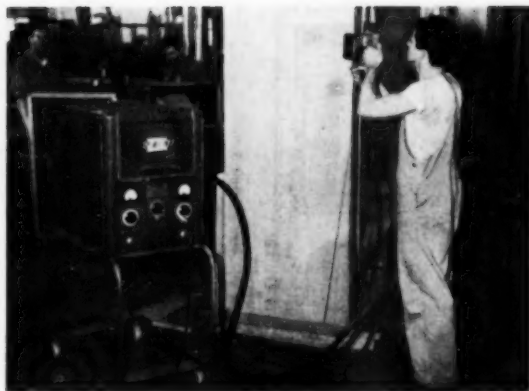


Fig. 3. Flat, receding or rising force-deflection characteristic is obtained by pre-stressing evenly as indicated at F, or giving a greater natural curvature at one end or the other. Force-deflection curve at J is obtained from arrangement shown at (c), Fig. 2.



A Rem electronic gluing machine with hand gun attached. Manufactured by the Electronic Division of the Gemmill Tractor Co. Pty. Ltd., the equipment is mobile and easy to use.



Another hand gun operation—fixing a $\frac{1}{4}$ in. maple quadrant in the rebate formed by two sheets of $\frac{3}{16}$ in. maple ply. The electrodes fit around the angle and where it originally took 16 minutes to set up four corners, using cramps, a Rem gun fastened all corners in 4 minutes without cramps.



The Rem being used to spot a $\frac{3}{16}$ in. maple ply to a $2\frac{1}{4}$ x $\frac{1}{2}$ in. milky pine frame. Each spot takes 8 seconds and the spots are approximately 8 in. apart. The fitting may be worked on immediately after spotting.

Putting The Molecules To Work

Electronic Heating in the Wood-Working Industry

ALTHOUGH for some six years and more high-frequency or electronic heat has been used in the metal and plastic industries, the latest application of this method to woodworking is creating a great deal of interest. It speeds up gluing and ensures greater strength in glued joints. Britain and the United States have seen this process through its "teething" stages and are gradu-

ally substituting it for other methods of glue setting in many fields. Here in Australia a few units are already employed but it is not generally known that recent research has made available equipment specifically designed for the joinery shop.

THE ELECTRONIC PRINCIPLE.

Naturally, it saves a great deal of time when heat is generated in

the glue line instead of being forced through the wood to the glue from an outside source. Heat can be produced within a substance by agitating its molecules sufficiently to cause inter-molecular friction. This friction generates heat. The molecules of most substances tend to align themselves in the direction of a voltage field in much the same way as a magnet lies in the direction of a magnetic field. If the voltage field is reversed, the mole-

cules turn, too. If we reverse the field often enough heat will result from the friction between the various reversing molecules. It would be impossible to make any mechanical device which could reverse quickly enough to bring about the necessary friction, but an electronic generator can produce an alternating field in the required range of 8 to 50 million alternations per second. So, by using a heat reactive adhesive and an electronic generator with suit-



A 1-kilowatt Rem unit used in conjunction with a pneumatic cramping table and jig. Four corners of the 17 in. x 18 in. frame are set simultaneously in 10 seconds. Shields are removed to show the top electrodes.



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ably placed electrodes we can apply a high-frequency alternating field to the work of glue setting. It is interesting to note that most adhesives are more sensitive to a high-frequency field than wood is. Consequently, the glue heats and sets before the wood has become more than warm. Electronic generators run from normal A.C. mains. The electrodes are simply light gauge metal strips placed in a particular manner about the joint to be made. It is not difficult to build them into existing jigs and presses.

HOW IT SAVES TIME.

Hot presses commonly used require 5 to 20 minutes gluing time, while cold setting takes from 1 to 8 hours. The new electronic gluing times range from 5 to 150 seconds depending upon the work, of which examples are given later.

One or more of the following will result from the shortened time: a direct increase in production, less handling, elimination or simplification of cramping, or reduced machining due to simpler self-holding joints. The double handling involved in cramping up and putting aside for a cold set . . . which loses more man-hours than are directly attributable to the job itself . . . is eliminated.

Other important advantages claimed are saving in floor space by the eliminating of stacking and the small size of the new equipment. It provides the opportunity, moreover, for the introduction of a production line technique, with reduced incidental handling and a better flow of work because an article is ready for working on a few minutes after gluing. New shapes are produced more economically, with a simple jig or die. Using electronic equipment, the single press and die technique, as applied to mass production in plastic moulding, can be adopted in wood working. Bradding is eliminated, with consequent improvements in the finished appearance. The slight depressions around the brads which often mar and otherwise flush panel are avoided—as also is the tedious process of stopping.

SELF HOLDING JOINTS.

An electronic machine with hard gun on the end of a 12 ft. cable makes it possible to set a joint in 10 to 30 seconds—the operator holding the pieces without having to resort to cramps.

Materials savings are effected in either of two ways. Firstly (Turn to page 36.)



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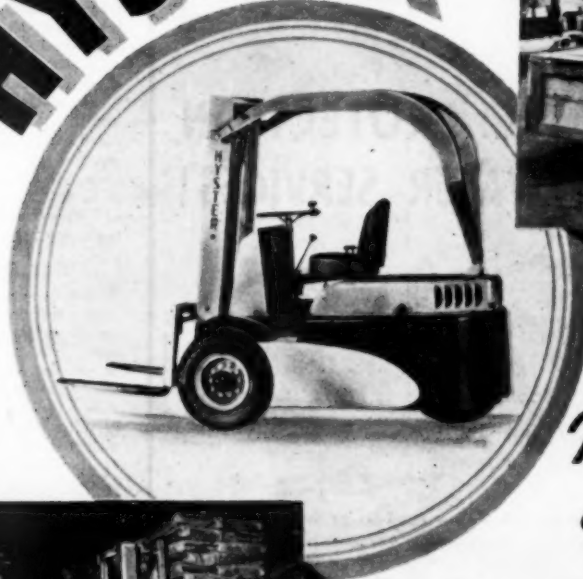
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The Hyster Company of America, one of the world's largest manufacturers of Materials Handling Equipment, has completed arrangements to have their well-known Industrial Trucks manufactured in Australia.

THE HYSTER "40," one of their most popular and versatile FORK LIFT TRUCKS, having a rated capacity of 4,000 lbs. and designed for both indoor and outdoor use, will be the first type to come off the assembly line early this year.

These will be manufactured under license by Sonnerdale Ltd., manufacturers of the well-known Diamond "S" Brand Gears and Automotive Parts.

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South Aust.: THE S.A. TRACTOR COMPANY,
231-233 Flinders St., Adelaide.

West Aust.: WILLIAM ADAMS & CO. LTD.,
432-436 Murray St., Perth.

"Wilcolator"

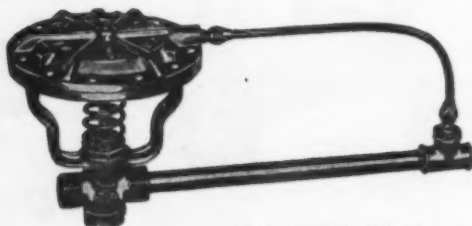
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some articles may be fabricated instead of being cut from the solid, with much of the solid material going to waste. This is possible because electronic jointing is so much more simple. Before the new method was perfected, a certain manufacturer found it more economical to cut mirror frames of faced corestock from the solid board, wasting the centre portion. Now, the process has been cheapened by cutting the four sides separately and joining the four corners with mortise and tenon joints—no cramps being required. A second way of saving results from the spare-time use of electronic plant for turning short ends into corestock. This seems to be the only economical method of core-stocking with boards down to a foot long.

JUST PLUG IT IN.

Installation of an electronic gluing machine is simply a matter of plugging into the electrical main. There is no warm-up period—the machine is ready for use 30 seconds after switching on. Power consumption is low and little current is drawn unless gluing is actually taking place. In a medium sized factory a small machine would make no noticeable difference in the electricity account.

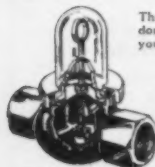
Electronic gluing provides a very strong permanent bond which is either moisture resistant or completely water and boil proof according to the type of adhesive. The adhesives are self-spreading and may be applied as a dry film or in a run down the centre of one of the pieces to be joined. Apart from the actual quick setting, this in itself has often proved to contribute more than half the time saved in total assembly where hand brushing was previously necessary.

EQUIPMENT.

The Electronics Division of Gemmell Tractor Co. Pty. Ltd., of Sydney, to whom we are indebted for this article, is manufacturing gluing machines in three sizes—1, 2½ and 10-kilowatt output powers respectively. A push-button to start the operation is all that the joiner has to worry about once the machine is adjusted for a particular job. It is certain that all the possibilities of electronic gluing have not yet been realised but sufficient improvements in many types of work have been effected and enough

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technical information is available to warrant adoption of the process. Users themselves will soon find many other applications. Meanwhile, the Electronic Division of Gemmell Tractor Co. Pty. Ltd., of 92 Cleveland Street, Chippendale, N.S.W., will gladly furnish technical details and advice concerning the use of electronic gluing in woodworking.

The Negative Spring

(Continued from page 32.)

affects the force it exerts. The limiting case, which is the greatest force, occurs when a section is unwound from its natural radius of curvature. If the spool or drum on which the spring is wound is of a larger radius than the natural one, a fraction of the straightening work already has been done by mechanical restraint; thus less force is required to complete the straightening.

The larger the spool, the less force the spring exerts, other factors being equal. Should, for example, the spool be elliptical, as in Fig. 2c, the radius at the point of uncoiling would change cyclically. Thus such sinusoidal force-deflection characteristics as shown at J, Fig. 3, become possible.

Consider the effect of a gradual change in the radius of the coil with the normal winding or unwinding of successive coil turns. If a uniformly pre-stressed spring were made of relatively heavy stock and uncoiled from a spool of relatively small radius, the result would be a gently rising force-deflection characteristic as shown at K, Fig. 3. Successive increments of length would be straightened from successively smaller radiuses.

Other arrangements of the negative spring are shown in Fig. 2 at d and e, where it is coiled on two spools. Since it takes more work to uncoil the negative spring from a smaller spool than from a larger spool, the normal tendency on two free turning spools in the arrangement at d would be for the unrestrained spring to run from the larger spool on the right on to the smaller spool at the left.

When the spools are of the same diameter, as at e, coiling torques are balanced, and the system is one of simple power and motion transmission, not unlike a pulley-belt arrangement with only one leg.

In addition to its unique force-deflection characteristics, other advantages are claimed for the negative spring. One is its great range of action, stated to be 30 to 50 times the original dimension of the unloaded spring. This compares with the usual extension spring which expands only 1 to 2 times its original length.

Other advantages are said to be its ability to act without losses or inaccuracies round corners and through small openings, and its

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ability to store and deliver approximately twice as much energy as an ordinary spiral or power spring occupying the same space.

Most common use for the negative spring is likely to be for the constant loading of mechanisms. Hitherto, to achieve this, designers have had to cause springs to act through cam or lever systems or to specify extra long springs with force-deflection characteristics only approximating to flatness. Alternative was to replace springs with dead weights. The type with a falling force-deflection characteristic would find application in opening and closing devices.

Other fields of application have appeared. There are many possibilities in using the negative spring as a means of translating linear into circular motion, and vice versa. As a clamp the device promises a number of applications. The simplest means is to permit the two ends to coil freely so that the pressure between the opposed coils holds the clamped object. Pressure between the coils can be constant, regardless of the thickness of the object held.

Electrical engineers are considering the device as a variable resistor, the modulation of which is evenly continuous. The coil form makes it useful for changing the amount of laminated iron in a magnetic field. Applications of the arrangement shown in Fig. 2e to circuit tuning permits the elimination of take-up springs and flexible bands. The centre drum could be used for coarse adjustment, and either of the smaller shafts for fine adjustment.

GENERATORS FOR KIEWA PRODUCT.

Australian General Electric Pty. Ltd. have received through Bovis & Co., an order for two generators for No. 5 Power Station at the Kiewa Hydro-Electric Project.

The two generators are rated 17,778 kVA each, and will be of Metropolitan-Vickers manufacture. The designed speed is 600 r.p.m., and the generators are for vertical operation.

The Bovis turbines will work under a net head of 1,565 ft., and receive water through a pressure tunnel from a pond or the mountain side, which is fed by a race constructed on a contour along the mountain.

This race is roughly 25 miles long and conducts water at about 3,000 gallons per second from the West Kiewa River. After serving No. 5 Station the water is to enter an-



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other pressure tunnel and drop to No. 4 Station for which Metropolitan-Vickers are now manufacturing three 13,000 kW generators.

THE GAUGE AND TOOL EXHIBITION.

15TH - 25TH MAY, 1951.

The third Gauge and Tool Exhibition to be organised by the Gauge & Tool Makers' Association will be held in the New Hall of the Royal Horticultural Society, Elverson Street, Vincent Square, London, S.W.1, from Tuesday, 15th May, 1951, to Friday, 25th May, 1951.

The following classes of engineering equipment, manufactured by members of the Association, will be displayed at the Exhibition:

Gauges and Measuring Equipment; Jigs; Fixtures and Special Tools; Special-purpose Machines and Equipment; Press Tools; Portable Power Tools; Moulds and Dies; Engineers' Small Tools; and Diamond Tools.

MAZDA FLUORESCENT CHECK LIST.

Australian General Electric Pty. Ltd. announce the release of the Mazda Fluorescent Check List, which has been produced to ensure maximum operational efficiency from Mazda fluorescent lamps.

Attractively printed in black and green in a two-fold single sheet form, this new production enables electrical contractors to first check any "symptoms" of inefficiency in fluorescent installations. Each "symptom" has a number, and by turning to this number in the reference section the reader is confronted with possible causes and suggested remedies.

It is expected that this new Mazda Check List will be much in demand by electrical contractors servicing fluorescent lighting installations.

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A new organisation recently formed in New South Wales is the Mason-Kolok Manufacturing Co. Ltd., the object of the formation being the acquisition of the

carbon paper and ribbon factory and enterprise of J. Mason and Son Pty. Ltd., Mascot, together with the ancillary interests of that establishment, including the manufacture and distribution in Australia and New Zealand of "Kolok" carbon papers and type-writer ribbons. The ancillary in-

terests embrace the selling rights in Australia of Grafton slide fasteners; a controlling interest in Neotype Manufacturing Pty. Ltd., St. Marys, New South Wales, manufacturers of duplicating stencils; and the manufacture of cash register, duplicating, and stamp pad inks.

INQUIRIES FOR PLANT MATERIAL AND AGENCIES

"THE AUSTRALASIAN MANUFACTURER'S" INQUIRY DEPARTMENT

This Inquiry Service is for the use of readers of "The Australasian Manufacturer" who wish to trace suppliers of Plant, Equipment and Materials, and for particulars of agencies offered. Address your inquiry to the Inquiry Department, and give the fullest possible particulars to enable us to put you in touch with the best sources of supply. **INCLUDE A STAMPED SELF-ADDRESSED ENVELOPE WITH YOUR INQUIRY.** It is essential that telephone inquiries be confirmed by letter. No charge is made for Inquiry Services, but normal advertising rates will be charged if agencies are sought by manufacturers' representatives or if goods are offered for sale. For the benefit of new subscribers, inquiries will be published in two or more consecutive issues.

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WHEN REPLYING to an Inquiry, please quote the Reference Number and send your reply to the Inquiry Department, "The Australasian Manufacturer", 16 Bond Street, Sydney. **INCLUDE A PLAIN, STAMPED ENVELOPE** so that we can forward your reply to the Inquirer.

SPRING WIRE: Sydney firm wants to purchase supplies, in quantity, of 9, 10, 11 or 12 S.W.G. Spring Wire. If you can supply, write to Ref. 8381, c/o "The Australasian Manufacturer."

ROPE PULLEY BLOCKS, with Gunmetal Sheaves, Double, Treble and Snatch Blocks available. Heavy type, 1 in. to 10 in. diameter. Write to Ref. 8377, c/o "The Australasian Manufacturer."

FINANCE FOR SMALL INDUSTRY. Executive, aged 36 years, desires to purchase an interest in an established business to £5,000, preferably in manufacturing field, where services can be utilised. Enquirer has managerial sales and accounting experience, together with a sound administrative background. Write to "Finance," c/o "The Australasian Manufacturer," Box 1687, G.P.O., Sydney.

HEXAGON BRASS RODS.—SUPPLIES WANTED: Sydney firm needs approximately 300 feet of 0.5 Hexagon A/F Brass Rods, machining quality, but would be satisfied to obtain portion of this quantity, possibly from 2 or more sources. Any firm that can supply in full or a portion of the 300 feet is requested to communicate with Ref. 8382, c/o "The Australasian Manufacturer." The inquirer is also prepared to replace the material to the supplier when stocks on order from the mills come to hand or buy the material straight-out according to the wishes of the firm supplying.

"LAMINITE" DISCS FOR SALE: Brisbane firm has for sale a quantity of 2½ in. dia. ½ in. thick C.E. grade "Laminite" discs, suitable for fabric gears, pulleys, etc. Write to Ref. 8364, c/o "The Australasian Manufacturer."

FOR SALE — MASSELY PRINTING PRESS. Model No. 31, now surplus for needs of present plant available for sale. Has been used only for experimental work and is as good as new. Suitable for printing on metal, celluloids, plastics, cloths, leathers, papers, making of specific types of etched plates, and a wide variety of uses. This press is well known through the trade. As good as new, available at a very great saving on a new machine. Write to "Metalware," c/o "The Australasian Manufacturer," Box 1687, G.P.O., Sydney.

HEXAGON BOLTS AND NUTS. SURPLUS QUANTITY FOR SALE: Sydney firm has available for sale, about 3 tons of surplus Hex. Bolts and Nuts, black, 1½ in. dia., various lengths to 7 in. long, in good order and original bags. Full information from Ref. 8384, c/o "The Australasian Manufacturer."

AGENCY AVAILABLE — TUNGSTEN CARBIDE TIPPED DRILL STEELS: Inquirer desires to appoint distributors for Victoria and South Australia for the sale of Tungsten Carbide Tipped Drill Steels of Norwegian manufacture. If interested in this inquiry write to Ref. 8383, c/o "The Australasian Manufacturer."

FOUNDRY SAND MILLS: Manufacturers or firms who can supply a Small Foundry Sand Mill (New or Second-hand) are requested to write to Ref. 8385, c/o "The Australasian Manufacturer."

DIE BLOCKS FOR SALE: Sydney firm has a large quantity of N.C.M., Heppenstall & Finkl Die Blocks of various sizes, for Sale. For full particulars, write to Ref. 8377, c/o "The Australasian Manufacturer."

PNEUMATIC SANDERS: The Australian agent for Sundstrand Pneumatic Sanders (Britain) Ltd., Warwickshire, England, is requested to write to Ref. 8380, c/o "The Australasian Manufacturer."

HEAT TREATMENT FURNACE WANTED: Manufacturer invites quotations for the supply of an oil fired heat treatment furnace, thermostatically controlled, capacity approximately 2000 lb. per 8 hours at 1,000 cent. max. mechanical loading, batch type, new or second-hand. Write to Ref. 8376, c/o "The Australasian Manufacturer."

MATERIALS EXCHANGE: Manufacturer wishes to exchange 3 tons 6 ft. x 3 ft. x 16 gauge "Sunstar", 2 tons 8 ft. x 3 ft. x 16 gauge Zinc-Annealed, for something similar in 20 or 22 gauge, Cash adjustment, urgent. Write Ref. 8374, c/o "The Australasian Manufacturer."

HOMOGENISER WANTED: Adelaide firm is endeavouring to locate a new or second-hand Homogeniser which has a capacity of 25 to 100 gallons per hour. The type required is a pressure loaded valve, 1,000-6,000 lbs. of pressure per square inch, either single or triple cylinder. Write to Ref. 8378, c/o "The Australasian Manufacturer."

STEEL STRIP FOR SALE. We have available from stock supplies of steel strip, 18 and 20 gauge, 6 in. wide x 72 in. long imported deep drawing quality. Write to Edgar Ryves & Hawker, 8 Bridge Road, Glebe, N.S.W. Phone MW 2588.

TENSALLOY PRECISION CASTINGS

For prompt delivery, Tensalloy Alloy Castings. Light and strong; with or without Inserts; little machining necessary; high tensile strength, and low die cost.
Motor Housings — Bearings of all descriptions — Pulleys — Machine Tool Components, etc. Capacity available. Inquiries invited.

TENSALLOY PRECISION CASTINGS

11 Albert Street, Brunswick, N.10, Vic.
Telephone: FW 2111

If you already have connections in England
— as is the case with several of
our Australian Principals —
these in no way conflict with our Specialised Service
which is exclusively

FOR AUSTRALIAN MANUFACTURERS

Although we handle all requirements, we are chiefly engaged in Negotiations for Manufacturing Rights, Sole Agencies, Selection of Employees (Emigrants) — all of which require intimate knowledge of Australia and the particular experience we possess.

WE OPERATE PERSONALLY AND CONFIDENTIALLY AS
YOUR OWN LONDON OFFICE

— Kindly refer to our previous notices —

C. H. HORDERN & CO.
60 CONNAUGHT STREET,
LONDON, W.2.

Cables: "OVSEASREP," London.
Tels.: Pad. 3959, Amb. 6535.

WALL TILE

Industrial 4in. x 4in Plain Cream
Glazed, suitable for:

AMENITIES BLOCKS, ABATTOIRS,
KITCHENS, FOOD PROCESSING
PLANTS, SERVICE STATIONS AND
HOME USES.

Available direct from factory.
Attractive low prices to industrial
users for quantity.

COMMONWEALTH CERAMICS LTD.

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MASCOT, N.S.W.

*Phones: MU 3009, MU 1591-2.

CHEMICAL TANKS, DRUMS, CONTAINERS

coated against Acids
and Alkalies

Articles of all Shapes and
sizes PLASTIC COATED

J. & F. BROCK BROS.

PTY. LTD.

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Vic. Tel.: LA 1437.

INDUSTRIAL SAND and SHOT BLASTING

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5,000 to 500,000
All Sizes

A. & A. Engineering Co.

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*Phone: LU 2879

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Specialists in
Brocade and Stove Enamel

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to 15 tons and

DIE MAKING CAPACITY

H. ROBERTS & CO.
P.O. Box 57, Hurstby, N.S.W.
Tel.: Berewas 287

**WANTED TO BUY — BOLTS
AND NUTS:** Adelaide firm wants
to buy up to 2,000 BRH Bolts and
Nuts, 4½ in. to 8 in. long x ½ in.
diameter. If you can supply write
to Ref. 8379, c/o "The Australasian
Manufacturer."

**BEADING AND TRIMMING
MACHINE WANTED:** Sydney
firm wants to purchase a Beading
and Trimming Machine for cans
from ½ in. dia. to 1½ in. dia. Prefer-
ably automatic or semi-
automatic. If you can supply,
write to Ref. 8378, c/o "The Aus-
tralian Manufacturer."

GENERATING SET WANTED:
Sydney firm requires to purchase
a generating set not less than 20
K.V.A. capacity, with or without
power unit. Ring MU 1297, or
write to Ref. 8367, c/o "The Manu-
facturer."

**DISTRIBUTORS WANTED —
SOUVENIR ASH TRAYS:** N.S.W.
Manufacturer desires to contact
wholesale distributing firms in all
States, including the A.C.T., to
handle an attractive line of
souvenir ash trays. Firms inter-
ested are invited to communicate
with Ref. 8368, c/o "The Aus-
tralian Manufacturer."

**AUTOMATIC NUT-MAKING
PROCESS:** In "The Australasian
Manufacturer" of the 12th
August, we described and illus-
trated a new patented process for
punching a specially shaped nut in
sheet metal up to 1 in. thick. In
practice, a production department
can provide any number of in-
tegral fasteners by a simple
stamping operation. The U.S.A.
owners of this patent and
other patents are desirous of
appointing an Australian agent.
Full particulars on application to
Ref. 8370, c/o "The Australasian
Manufacturer."

**MANUFACTURE OF FIRE-
ARMS IN AUSTRALIA:** A resident
of California, U.S.A., who is
a designer of firearms, is desirous
of making contact with an estab-
lished company manufacturing
firearms in Australia, or with per-
sons who might be interested in
their manufacture. He claims to
have designed a pistol of three
different calibres—22, 32 and 38,
with interchangeable parts, also
rifles and shotguns. Readers
interested are requested to write
to Ref. 8372, c/o "The Australasian
Manufacturer."

CAPSTAL LATHE WANTED:
Adelaide Company is interested in
securing a 1 in. capacity Capstal
Lathe. Write to Ref. 8360, c/o
"The Australasian Manufacturer."

**IMPORTERS OF ARTIFICIAL
GLASS EYES:** A German corres-
pondent of "The Australasian
Manufacturer" desires to contact
manufacturers in Australia, of soft
toys and dolls who may be inter-
ested in importing glass eyes from
that country. They are also
anxious to contact importers of
artificial glass eyes for men.
Write to Ref. 8373, c/o "The Aus-
tralian Manufacturer."

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"We Give You the Tip" —→

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Now Available from Stock

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Telephones: MB 2121, MB 2122.

HEAT SHAPED

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PISTON RINGS

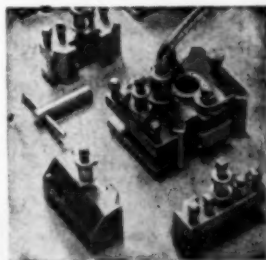
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A FULL RANGE.
FREE FROM
DISTORTION.

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Telegrams:
"PISTONRINGS,"
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RAPID EXCELSIOR Lathe Tool Post

Any number of tools ready set — quickly
changed.

Power feed for drilling.
Tools resharpened in position.
Height adjustment.

Ask for illustration.

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A MARKET IN SOUTH AMERICA

An established selling organisation wishes to establish contact with Australian
manufacturers interested in placing their products on the valuable Argentina
market. Lines considered particularly suitable include Automotive Parts and
Accessories, Tyres and Tubes, Tradesman's Hand Tools, Electric Tools, X-ray
Apparatus, Vacuum Cleaners, Floor Polishers, Lawn Mowers, Machine Tools,
Agricultural Machinery, Medical Rubber Hose, Moulding Powders, etc.
Initial negotiations can be conducted in Australia.

Write to —

"ARGENTINA," c/o "The Australasian Manufacturer," 16 Bond Street,
SYDNEY, N.S.W.

SALES REPRESENTATION

IN

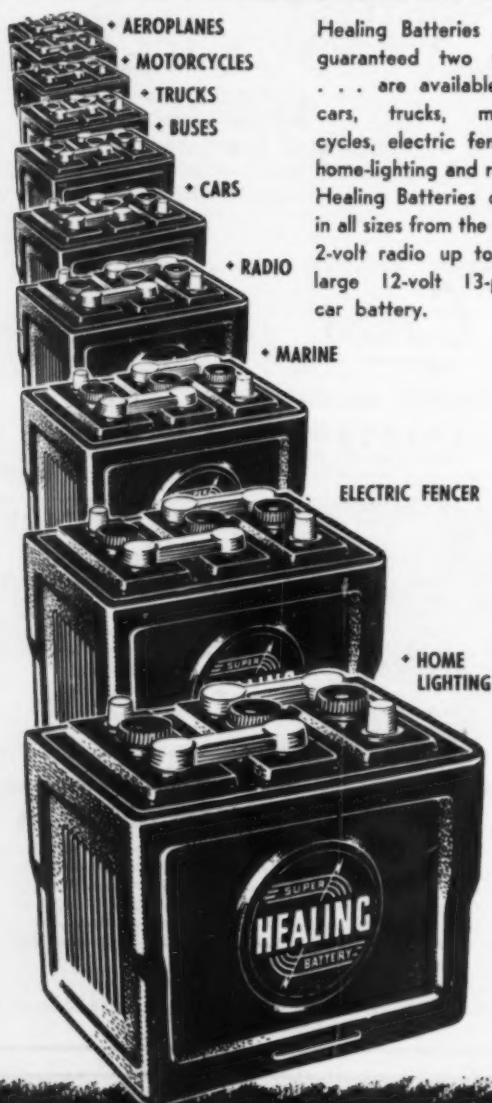
PORT KEMBLA

Mining Specialities is a well-established organisation operating in the Port Kembla
area.

We are sales representatives in this district for several leading Australian
manufacturers of engineering equipment and supplies and are prepared to handle
additional lines on an agency basis.

MINING SPECIALITIES

87 WENTWORTH STREET, PORT KEMBLA, N.S.W.
164 BLAIR STREET, BONDI, N.S.W. *Phone: FU 6957.



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HEALING BATTERIES**

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MELBOURNE SYDNEY ADELAIDE BRISBANE

Healing Batteries . . .
guaranteed two years
. . . are available for
cars, trucks, motor-
cycles, electric fences,
home-lighting and radio.
Healing Batteries come
in all sizes from the small
2-volt radio up to the
large 12-volt 13-plate
car battery.

IMPORTED STEEL

SHEETS (Deep Drawing, Blk., Gal.)
M.S. AND BOILER PLATE
JOISTS, CHANNELS, ANGLES
REINFORCING RODS
PIPING (Blk. and Gal.)
BRIGHT STEEL SHAFTING
WIRE & WIRE NETTING
ASBESTOS CEMENT SHEETS & PIPING
REFINED PIG IRON

Standard sizes and gauges can be offered for early shipment
from overseas

PRICES REASONABLE

ENQUIRIES INVITED

Hurley & Dewhurst Pty. Limited

WINGELLO HOUSE, ANGEL PLACE, SYDNEY, N.S.W.

Telegrams: "DEWLEY," Sydney

Phone: BL 2563

**SULPHIDE METAL POWDER
AND OXIDES:** Indian firm desires
to contact makers or suppliers of
Cadmium Sulphide, orange 99-
100%; Selenium Metal Powder 99-
100%; Titanium Oxide or Dioxide
98-99%. If interested in this in-
quiry write to Ref. 8369, c/o "The
Australasian Manufacturer."

**RUBBER MILLS WANTS
QUEENSLAND AGENTS:** Rubber
Mills supplying rubber parts in a
wide range, for the Motor Body
Industry and complete coverage of
the Refrigeration Trade, desires
to appoint representatives in
Queensland. They make a wide
range, including such parts as
car mats, rubber extrusions,
sponge rubber products, extruded
gaskets, sponge rubber sheeting,
wringing rollers, perambulator
tyreing, etc. If you are interested
in this Agency communicate with
Ref. 8362, c/o "The Australasian
Manufacturer."

**AERONAUTICAL ENGINEER
WANTS POSITION:** Dutchman,
University graduate, leading position
Dutch aircraft industry, 12
years' technical and commercial
experience Europe, Indonesia and
Australia (1944-48), in possession
Australian entry-permit, pilot since
1938; languages English, French,
German; Malay; desires position
in Australia. Write to Ref. 8363,
c/o "The Australasian Manufacturer."

**MANUFACTURE OF PAINT—
AMERICAN LICENCE AVAIL-
ABLE:** An American firm of
paint manufacturers producing a
high quality surface coating for
concrete, stone, masonry, cement
and cinderblock structures is de-
sirous of negotiating with an
established reputable paint manu-
facturer in Australia for the sale
of the formula for a small token
payment plus royalties. Firms in-
terested write to Ref. 8366, c/o
"The Australasian Manufacturer."

After Business Hours

(Continued from page 2.)

homeward bound sailings after
long absences. When that joyful
thrill is magnified by numbers, a
happy atmosphere permeates each
heart and life is well worth the
living. Hidden talents burst forth,
and one is amazed to find fine
singers; story tellers, and actors,
who have lain under a bushel. A
club is everyman's theatre; every-
man is in the cast. It is one of
life's delights lending an atmo-
sphere of enchantment which takes
us from the stern realities of life
into a fairy world of vision and
fantasy. An uplifting safety valve.
I know of only one error in Roger's
"Thesaurus"—beer isn't listed under
"inspiration".

Yankeeland's near here. Never a
dry country, I suppose canned beer
appeared when America's wetness
was officially recognised just to
kid the authorities that alcohol
was a new thing. As if they didn't
know. In prohibition days New
York customs searchers were rum-
runners' best customers. On my
first Christmas in the U.S.A., the
only man who had to be carried to
bed was the local chief of the
Customs Department. Why not!
Beer induces appetite. Satisfying
that gives health and strength. To
hark back to England. In the
days of her greatest glory a man
was considered a weakling unless
he was under the weather each
night, after taking lashings of nog-
gins with gigantic meals. They
lived longer then and much more
happily.

Class distinctions are intruders
in bars. On a liner, some Dutch
marines travelled third. The third
class bar was the earliest closed.
The soldier-sailors passed their
empties through a porthole to
more privileged passengers who
passed back the re-filled glasses
by the same route. What better
umpire than John Barleycorn?
Every man his fellow's equal; a

(Turn to page 44.)

A FERRO ALLIED SERVICE TO THE AUSTRALIAN CERAMIC INDUSTRY

FERRO ENAMELS (AUST.) PTY. LTD.

and

ALLIED ENGINEERING COMPANY U.S.A.

(Division of Ferro Enamel Corporation)

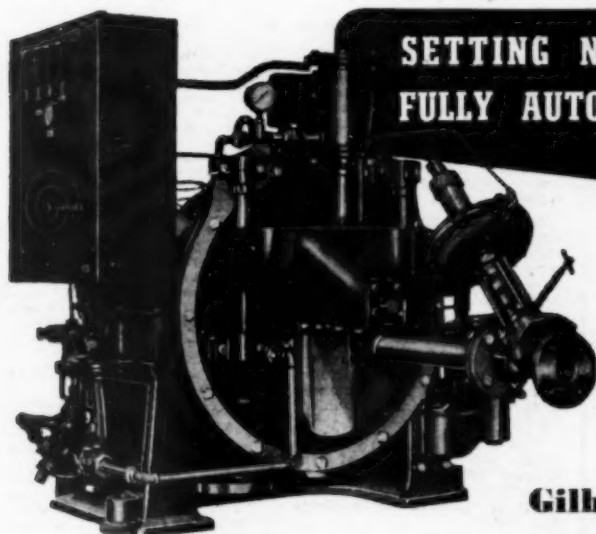
are pleased to announce the completion of special arrangements whereby the services of Mr. Frank P. Henderson, Ceramic Engineer of the parent Company, U.S.A., will be available for consultation with the Australian Ceramic Industry as from March 1, 1951, for an indefinite period.

Whilst Mr. Henderson has wide experience in the Ceramic Industry generally, he is particularly well qualified in problems associated with brick manufacture in North and South America, including Tunnel Kilns, equipment design and plant lay-out for both the dry press and wet extrusion methods.

Enquiries will be welcomed by

FERRO ENAMELS (AUST.) PTY. LTD.

27 BOURKE ROAD, ALEXANDRIA, N.S.W. TEL. MX 1151



**SETTING NEW STANDARDS IN
FULLY AUTOMATIC DEHYDRATION**
of Crystals ...

The Sharples Super-D-Dehydrator

● A fully automatic perforate-basket continuously operating centrifuge for washing and dehydrating crystals. ● No operating labour required. ● Cycle timers automatically control screen rinsing, loading, draining, rinsing, drying and unloading cycles, continuously at full rated speed. ● Flexibility of control — instantly variable adjustment of all cycles. ● Uniformity of product, low moisture content, continuous production, high hourly output — low process costs.

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Gilbert Lodge & Company Limited

Representing THE SHARPLES CORPORATION
FACTORIES IN AMERICA AND ENGLAND

What is your problem? Continuous centrifuging may be the answer — consult our Process Engineers.

Centrifugal and Process Engineers

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No Job Too Big..

Whatever your scaffolding problem, call and consult **MILLS SCAFFOLDS**. Faster, safer and more economical than older types, **MILLS Tubular Steel Scaffolds** have been used on some of the biggest jobs in Australia... yet are equally suitable for the simplest contracts. That's because you pay only for the actual amount of tubular steel used in each assembly... and only for the period required. There is no waste material to allow for in your costing... no 'dead' time to worry about. Your workmen walk straight onto the job with **MILLS SCAFFOLDS**!

MILLS STEEL SCAFFOLDS

A Division of John Lynght (Aust.) Pty. Ltd.

Depots and complete service facilities at
SYDNEY, MELBOURNE, BRISBANE AND NEWCASTLE

MZ19-1106

NEW FACTORY REGISTRATIONS

NEW SOUTH WALES.

W. K. Batt, 10 Lakemba Street, Belmore—Builders' Joinery.
Eden "Forge", 1188 Canterbury Road, Punchbowl—Wrought Iron Working.

B. F. Manufacturing Co., 27 Erskine Street, Sydney—Ladies' Underwear.

Bishop-Forme Construction Pty. Ltd., 22 Arthur Street, Marrickville—Metal Concrete Forms.

Boulton, Boulton & White, 200 Penshurst Street, Beverley Hills—Aluminium Castings.

Brickworks Ltd., Trevenar Street, Ashfield—Bricks.

Smalley Clark, 513 Anzac Parade, Kingsford—Men's Clothing.

M. E. Cowell, 219 Bronte Road, Waverley—Clothing.

E. J. Daggar, 3 Wavell Parade, Earlwood—Babies' Clothing.

A. DeCappi, 1374 Pacific Highway, Turramurra—Clothing.

Divine Lingerie Pty. Ltd., 4a Ormond Street, Paddington—Brassieres.

L. S. Dole, 156 Bonds Road, Punchbowl—Steel Fabrication.

Edwards Riley Clarke & Kenks, 282 Canterbury Road, Canterbury—Sheet Metalwork.

Peters Venetian Blinds Service Co., 47 King Street, Newtown—Venetian Blinds.

Fidax Engineering Pty. Ltd., 202 Willoughby Road, Naremburn—Ironfounders.

Franklin Manufacturing Pty. Ltd., 2 Close Street, Canterbury—Metal Spinning.

Franks & Levitt Pty. Ltd., cnr. Piper and Katherine Streets, Leichhardt—Furniture and Cabinetmaking.

Freshco Knitting Mills Pty. Ltd., 443 Kent Street, Sydney—Knitted Goods.

Miranda Wickerworks, 70 Karimbila Road, Miranda—Cane Furniture.

The Standard Brass Foundry, rear 636 New Canterbury Road, Hurstville—Brassfoundry.

Babywear, Tiny Folks, 325 Glebe Road, Glebe Point—Babywear.

A. B. Erwin, 92 Queen Victoria Street, Bexley—Joinery.

VICTORIA.

Martin & King Pty. Ltd., Centre Road, Westall—Engineering.

May & Rybajsen, 227 Latrobe Street, Melbourne—Women's Clothing.

Brown & Kantor, 661 Burwood Road, Hawthorn—Furniture.

Hooper & Keady, rear 1147 Malvern Road, Malvern—Engineering.

Burke, Chamberlain & Williams, 57 Hardware Street, Melbourne—Textile Printing.

Hayhow & McCleery, 46 Lonsdale Street, Dandenong—Engineering.

Kirwin & Knight, 72 Dandenong Road, Frankston—Fabric Manufacturers.

Charles & Hunting, Sydenham Street, Highett—Engineering.

RELAX PETROL SPRAY PAINT UNIT

FOR EVERY PAINTING JOB!



A portable unit for oil, water paints, lacquers—quickly and easily applied at a pressure up to 15 lbs. Supplied complete with 1 h.p. Ampson motor or as 22V. or 188V. D.C. model for lighting sets. Three nozzles—fan type, fine spotting type and angle type for ceilings. Air chuck for tyre pumping can be supplied.

Also available as electric 240V. A.C. model.

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Simpson Agencies Pty. Ltd.,
MELBOURNE, VIC.

Topp & Farmer,
ADELAIDE, S.A.

W. H. Evans Pty. Ltd.,
PERTH, W.A.

(Continued from page 42.)

favour asked is a favour accomplished.

That's another hop in our worldwide hop-chasing. Time to get home. In every State there's a worthy draught. A place in Newcastle in days heretofore, sold every brand Australians know, and many familiar to overseas travellers. The licensee is a lifetime teetotaler. Perhaps he's still wondering which brand to try.

Let's imbibe for him. Imagine sun's rays beaming down on us as we sit outside a country pub, wrapping our collective throats round a field of barley, relaxing after a hard week's work. The troubled world is paradise regained as the oldest inhabitant tells his recipe for longevity: "Alcohol's the best preservative", as the local ne'er-do-well narrates his scrapes; as we learn of paintings from the struggling artist who can barely afford his quaff.

That's how I conceived this article, indulging in one of life's delights. What an investment. An editor is going to give me a cheque, which, by ethical standards belongs to a brewer.

The pot flows through from start to finish. It's the alpha and omega and all in between. Hope you've inhaled enough of its fumes to be inspired to achieve something great.

There's your wife calling. The dirty dishes are waiting.

McAuley, J. B. L., 1006 Sturt Street, Ballarat—Panel Beating.
Brown, J. A., Railway Avenue, E. Oakleigh—Furniture.
Goldman & Cahn, 395 Chapel Street, Sth. Yarra—Clothing.
Cook, B., Pty. Ltd., 220 Collins Street, Melbourne—Clothing.
Neven & O'Connor, cnr. O'Nena Road and Turner Street, Coburg—Engineering.
Holmes, F. A., 574 High Street, Thornbury—Furniture.

Industrial Companies and Firms

NEW SOUTH WALES.
ASSOCIATED BUILDING SUPPLIES PTY. LTD.—Capital: £25,000. Manufacturers of builders' supplies and merchandise of all kinds. Subscribers: Australian Cement Investments Limited and Metropolitan Cement Distributors Pty. Ltd. Registered Office: Sydney. (Lodged by Arthur T. George and West, 10 Martin Place, Sydney.)

AVON APPLIANCES PTY. LTD.—Capital: £25,000. Washing machines, laundry appliances and household appliances of every kind. Subscribers: Stanley E. Nielson and Andrew C. Booth. Registered Office: 4th Floor, 84 Pitt Street, Sydney.

DAY, DOREEN, PTY. LTD.—Capital: £10,000. Clothing and lingerie manufacturers. Subscribers: David Levitan and Anne Levitan. Registered Office: Sydney. (Lodged by Pisk, Symonds and Co., 84 Pitt Street, Sydney.)

LANE, LETTY, PTY. LTD.—Capital: £10,000. Clothing and lingerie manufacturers. Subscribers: Paul Wein and Ethel Warden. Registered Office: Sydney. (Lodged by Pisk, Symonds and Co., 84 Pitt Street, Sydney.)

GARRARD, O. D., PTY. LTD.—Capital: £10,000. Manufacturers of springs and motor accessories, etc. Subscribers: Oswald D. Garrard and George W. Mitchell. Registered Office: Sydney. (Lodged by W. B. Meehan, 60 King Street, Sydney.)

LAYCOCK, SON & NETTLETON PTY. LTD.—Capital: £25,000. Manufacturers of knitted goods and fabrics, etc. Head Office: South Melbourne, N.S.W. Agent: Hedley D. Barkis, 537 Kent Street, Sydney.

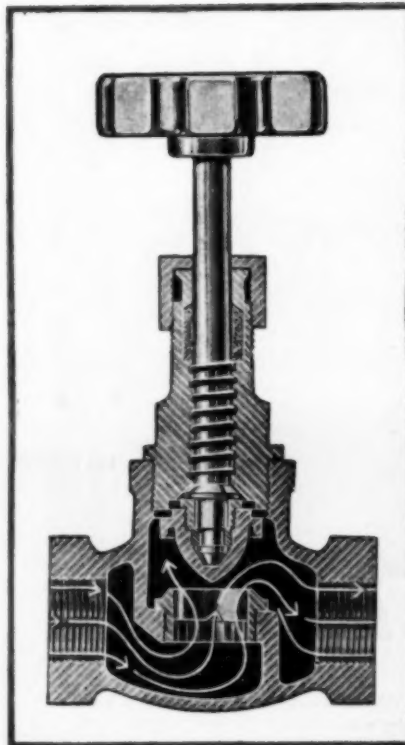
RAYON INDUSTRY— RAPID EXPANSION EXPECTED.

Advices received by the Trade and Customs Department point to a valuable expansion of the rayon weaving and printing industry in Australia as the result of the recent tariff protection.

The world-famous firm of Courtauld's is starting in a big way at Rutherford, near Newcastle. Bradford Dyers are setting up an establishment at Sale, Victoria, and the Nelson group has plans for estab-

3

POINTS MAKE THIS
DEWRANCE REGULATING STOP VALVE
First CHOICE OF
STEAM ENGINEERS



1. CONTROL. Provides accurate flow regulation and control of pressure between close limits to suit exactly the requirements of process or of production. Valve always shuts tight under all conditions of service and pressure within the range stated—even after considerable periods in the part open position.

2. SEAT PROTECTION. Special corrosion-resistant alloy valve and seat protected from direct impingement of steam. No erosion or corrosion of these surfaces ensures perfect seal.

3. LONG SERVICE. Valve body in steam bronze; valve and seat in hard, durable Dewrance alloy and readily renewable.

With more and more emphasis being placed on keeping down costs and keeping up production, more attention should be paid to proper selection and installation of valves.

When it is a new installation, or when it is a question of replacement, get the extra control, the extra service, the extra endurance of Dewrance valve designs.

Dewrance Regulating Stop Valves are available for steam pressures up to 150 and 250 p.s.i. in $\frac{1}{4}$ in. through to 2 in. sizes inclusive, screwed or flanged connections, internal or external screwed spindles. Insulated Hand Wheels.

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QUEENSLAND: EVANS DEAKIN & CO. LTD., Charlotte Street, Brisbane.

SOUTH AUSTRALIA: WILLIAM ADAMS & CO., 157 Waymouth Street, Adelaide.

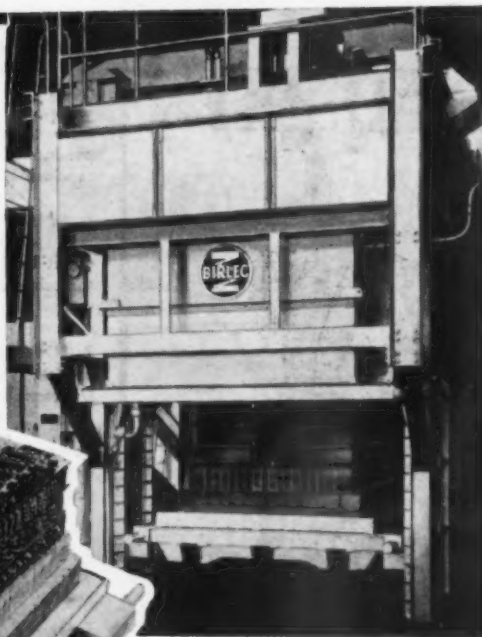
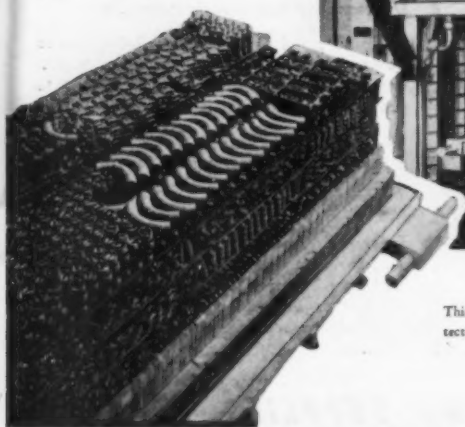
GET THE EXTRA ENDURANCE OF DEWRANCE VALVES



introduce a new SHORT-CYCLE ANNEALING PROCESS ... for malleable castings

Outstanding Features—

1. Reduces total cycle for most types of work to 24/48 hours.
2. Eliminates entirely the use of boxes and packing material.
3. Offers great economies in both labour and heating costs.
4. Produces clean-surfaced work, needing no barrelling.
5. Prevents peeling of annealed material.
6. Ensures constant product-quality by automatic control.



This revolutionary Birlec development, which is protected by patents, is of the utmost importance to the malleable industry.

BIRLEC LTD.
(Incorporated in England)

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MELBOURNE OFFICE — 415 LONSDALE ST.



Agents: ADELAIDE—Unbehau & Johnstone Ltd.; PERTH—Eagle & Globe Steel Co. Ltd.; BRISBANE—Alfred Snashall, Anthon Pty. Ltd.; WELLINGTON, N.Z.—H. P. Wrigley, G.P.O. Box 1136.

THERE'S A BIRLEC FURNACE FOR *every* HEAT TREATMENT AND MELTING PROCESS

lishing a factory in Tasmania. Apart from the tariff assistance afforded by the Commonwealth Government, State Governments are offering concessions to encourage the decentralisation of industry, and a good many important factories of various kinds have been established in country centres.

There are already four up-to-date plants in Australia weaving rayon piecegoods, and the Minister for Trade and Customs (Senator Neil O'Sullivan) stated recently that the industry represents at present an investment of over £5,000,000 in capital and funds employed in its operation. It employs over 2,000 people and provides a particularly attractive avenue for the employment of female labour at decentralised factories. About 90 per cent. of the labour in the industry is located in country centres.

Trade opinion estimated last year that Australia's requirements of woven rayon piecegoods were approximately 50 million yards per annum, viz.: plain dyed and woven patterns totalling 31 million, and printed 19 million square yards.

In respect of printed cloths, the local textile printing industry is well advanced, both in screen and roller printing, to meet Australian needs in this field by using imported grey cloths. There are some nine or ten establishments in the Commonwealth with plant capable of printing at an annual rate of over 10 million yards, and it is anticipated that by the end of this year the capacity will have increased to between 16 and 18 million yards.


The production capacity of local weavers between January and June is expected to reach 16 million square yards per annum, and by the end of the year the rate of production will be in the vicinity of 20 million.

The Tariff Board has pointed out that by the end of 1951, even assuming that consumption increases by 10 per cent. to 55 million square yards per annum, the industry will be able to supply a very substantial part of the requirements in the straight dyed and woven pattern fabrics amounting to, say, 33 million square yards; and, similarly, the rayon printers contend that they will be in a position to supply practically the whole of the 22 million yards required in the printed fabric field.

Referring to criticism of the new duties, Senator O'Sullivan said he believed that the critics would turn out to be as mistaken in their predictions as were those who criticised the protection given to the wool textile industry in 1925.

After the imposition of protective duties of 2/- sq. yard, plus 35% ad valorem, he said, the capacity and the production of Australian weavers of wool tweed and other wool cloth developed greatly. He gave the following figures:—1925-26, 5,983,000 sq. yards; 1930-31, 10,732,000 sq. yards; 1942-43, 39,746,000 sq. yards.

The history of the development of comparable industries under protective tariffs in other countries, he added, gave force to his



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argument. In Canada, for instance, after the imposition of protective duties on woven rayon piecegoods, the local industry made great progress, as indicated by the following figures:—1930, 10 million sq. yards; 1948, 104 million sq. yards; 1949, 120 million sq. yards.

In 1949 the Tariff Board furnished a report on the industry in Australia and recommended that the level of assistance needed as against imports under British Pre-

ference was 1/6d. per square yard. This rate of protection is considerably lower than that imposed on rayon fabrics in America, Canada and Great Britain.

SHOT-PEENING.

The Defence Research Laboratories have recently published Report 178: "Some Effects of Shot-Peening on Fatigue Resistance of

a Medium Carbon Steel," by R. McMurrich. Copies of the report are available to interested persons free on application to Chief Superintendent, Defence Research Laboratories, Private Bag No. 4, Post Office, Ascot Vale, Victoria.

The resistance to failure by fatigue of many metal components may be improved by peening the surface in the most highly stressed areas by a stream of small hard metal globular par-

ticles or shot. As part of a programme of investigation of this process, comparative tests have been carried out to determine the effects of shot-peening on plain and notched specimens of a medium carbon steel. Substantial improvements in fatigue resistance were noted. The peening treatment was observed to be more effective on turned than on ground surfaces.

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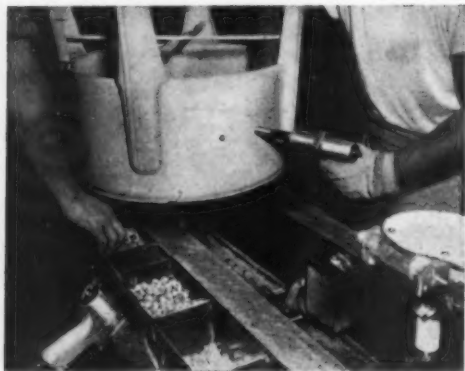
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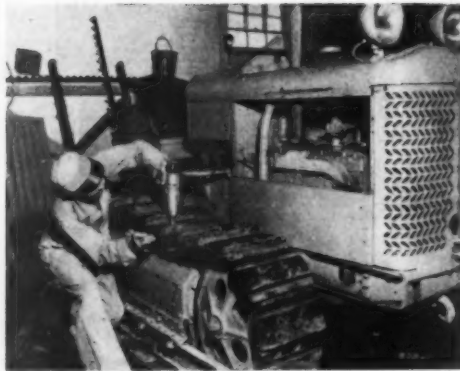
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Close-up of air impact wrench driving 5/16 in. 18 round head screws holding washing machine skirt to gear case.



On the cleat assembly shown, the electric impact tool is fitted with a 13/16 in. socket to run down the hex. nuts. Changing or repairing the cleat is also an easy matter. Even when rusted or frozen on, the nut can be removed with the tool in a matter of seconds.

Power Impact Tools are Key to Lower Assembly Costs

Impact tools have proved unusually effective in the application of fasteners, or in the tapping of holes

To-day an industrial revolution is taking place. Wages are steadily increasing; production costs are high. Corporate taxes are rising; buyer resistance is mounting. The pinch is coming from all sides. Economic conditions now demand greater production at lower costs, and time-saving in maintenance operations.

How to produce more in less time with higher wages, at a profit, has kept many manufacturers awake nights. This widespread industrial dilemma necessitates a re-valuation of production methods by both management and operating officials. Management must re-examine every operation to find places where time-saving will result in lower production costs. Operating officials must investigate specific jobs in their own departments to find where hand-work may be reduced or eliminated.

THE solution to to-day's manufacturing problem is not easy. At least part of the answer lies in mechanization. The goal of more work with less effort can be achieved through the greater use of power tools as a substitute for handwork.

Pneumatic power tools have long been widely used for industrial and construction applications. Some of these tools operate on the continuous torque principle; others operate on the intermittent torque, or impact principle. Newcomers to the power tool field are electric impact tools, which have proven themselves time-and-labour-savers in both production and maintenance work, especially in fastener assembly. The electric impact tool originated by the author's company is an outgrowth of the air-operated impact wrench that was introduced in 1933 and that has been widely adopted for speeding up bolting and similar work.

ADVANTAGES OF IMPACT TOOLS.

The special advantages of impact tools—both air and electric—

for fastener assembly lie in four features: (1) the extra power which is automatically provided whenever resistance is met; (2)

motor burn-out is eliminated in the electric tool—even if the spindle stalls completely; (3) the absence of torque reaction to the operator; and (4) the ability to tackle jobs which cannot be performed with regular air-powered or electric tools. This last is especially pertinent to the electric impact tool which, with standard attachments, is the original all-purpose tool. Fastening applications in which it may be used are nut-running and removal; driving and removing screws and studs; and extracting broken cap screws and studs. With various standard accessories, it will also drill metal, brick and masonry; drive wood augers; ream and tap.

Extra power: In some operations, such as the removal of rusted or frozen nuts, it is frequently impossible to remove the nut with an ordinary hand wrench, or with the usual torque type wrench, without considerable time



Over a thousand screws are used in assembling this pattern for a cutter's spider for dredging. About 13 hours are saved on the work through use of the electric tool. Screws 1/4 in. in diameter and 2, 3, 5 in. in length are required.

and resultant increased costs, but with impact tools, both air and electric, the job can be done in a matter of seconds. This is because the resistance offered by the frozen nut winds up the patented spring impact mechanism and the spring, when released, delivers thousands of rotary impacts per minute—a source of extra power which spins off the nut quickly and easily. Because the motor is reversible, this power can be used to drive or remove fasteners at the operator's will, merely by



An automotive repair shop estimates that this electric impact tool saves more than 50 per cent. of the time required with an ordinary wrench in shock absorber work. On this job, no vice or mounting bolts are needed, since the absence of torque reaction and the tool's light weight permit operation with one hand, leaving the other free to steady the work.

a twist of the wrist. Consequently, maintenance and repair time is greatly reduced.

Elimination of motor burn-out for the electric impact tools: This type of failure which increases time off the job and is a profit snatcher in fastener assembly work, is a common failure of ordinary electric tools. This source of trouble is eliminated with impact tools because even if the spindle is stalled completely, the motor continues to run at normal speed. Here is a major maintenance and economy advantage, just as the rotary impacts offer a time-saving advantage.

No torque reaction: Because of the nature of the impact mechanism, the operator feels no torque reaction or twisting. No kick-back is transmitted to the hand. This feature greatly reduces operator fatigue and also makes it possible to hold the tool with one hand, and thereby reach into inaccessible places, when necessary. The streamlined housing on the

tools permits ready introduction into confined spaces or close use to side walls.

Universal use: Such tools are especially useful in the performance of a variety of jobs which are difficult, if not impossible, to perform with conventional power tools. Removing frozen nuts has been mentioned. In construction work, masonry drilling to set lag screws for brackets, switch boxes and similar attachments has usually been accomplished laboriously with a star bit and hammer. With either air or electric impact tools and a standard carbide bit, concrete or brick can be drilled in a few seconds. On a job of this type, the impact mechanism operates continuously to provide the extra power necessary to perform the work.

Consider tapping, an operation which is frequently employed by manufacturers in assembly operations. It is both quick and easy to tap threads with the tool and then, by reversing the motor, back the tap out of the hole. The usual method of tapping is generally slower, more cumbersome, and it is more difficult to remove the tap. The impact tool can be taken to the job, thus eliminating expensive set ups on drill presses.

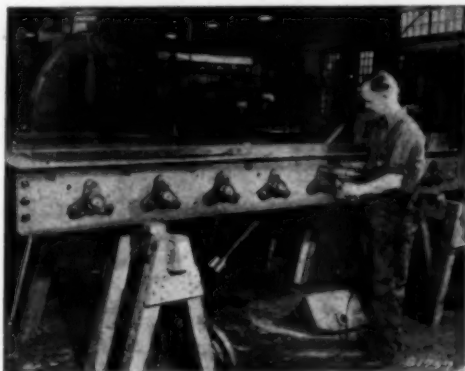
These versatile and powerful tools, says Mr. A. G. Ringer, of the

now made up to $\frac{1}{2}$ in. bolt size, and air tools from $\frac{7}{32}$ to 4 in. bolt size.

ELECTRIC-DRIVEN APPLICATIONS.

Some examples of savings effected in time and money through the use of the electric tool are given below. A farm equipment dealer estimates that the tool saves him about 50 per cent. or more of the time on each tractor assembly job. There are approximately 500 bolts to the cleats on each tractor. It takes 10 man-hours, or more than a day's work with an ordinary hand wrench to set and tighten these bolts. Doing the work with the electric-powered impact tool takes only between 4 and 5 hours, and cuts assembly time in half.

Known time-saving industrial applications of the electric tool are found in such widely-different fields as gate assembly; in the production of materials handling equipment; maintenance and construction of dye cages in textile mills; production and repair of refrigerators; and pattern assembly and disassembly in foundry pattern shops. Electric tools also have a number of applications in the automotive field. In cleaning and repair operations, they are used for removing and applying



Applying 80 square nuts in the assembly of an ash gate is done in only two-thirds of the usual time with the electric impact tool. In addition, the tool with appropriate attachments is used for tapping and reaming and for studding the cylinders of the ash gate.

Ingersoll-Rand Company in an article in "Fasteners", published by the Industrial Fasteners Institute, can be used to advantage for practically every fastening job within their rated capacities. The electric tools made by my company, continues Mr. Ringer, are

nuts on wheels, cylinder heads, springs, and shock absorbers.

In one operation in the construction of materials handling equipment, involving ash gate assembly, the shop foreman estimates that the use of the electric tool increases shop capacity

by one-third by moving jobs through faster. The assembly requires the application of approximately 80 $\frac{1}{2}$ in. square head nuts to a gate. With the previous hand-wrench method, it required 2½ days to assemble 5 gates. The wrench often slipped as the nuts were drawn tight, necessitating several attempts to tighten a single nut. The electric tool spins the nut on and then tightens it, all in one quick operation, and cuts assembly time to about 1½ days to every 5 gates.



Tapping is a natural operation for this reversible electric impact tool. The popular range of sizes from $\frac{1}{8}$ to $\frac{1}{2}$ in. is easily handled, and, with the motor reversed, the tap can be backed out without any trouble.

In a foundry pattern shop, the electric tool is so useful that each of the ten workmen has his own tool. The foreman estimated that approximately 80 per cent. or more time was saved in pattern construction, repair and disassembly through using the tool with a screw-driver attachment, than with the ordinary screw-driver. In another foundry, the tool is being used as a screw-driver for No. 12 and No. 14 wood screws with an estimated saving of 25 per cent. on the overall pattern assembly job.

In short, wherever screws, bolts and nuts are used, these fasteners can be applied and removed at lower cost with such tools than with conventional tools.

AIR-DRIVEN APPLICATIONS.

Because air-operated tools have been on the market longer than electric impact tools, their application to fastenings is even more extensive. Here are a few cases of the value of such air tools on the job—in dollars and cents savings on fastening operations.

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A railroad shop assembled air line clamps to car trucks. After the drilling operation, the tapping and bolting up were done by hand. A small air-operated tapper and a tool were put on the job. The investment paid for itself in forty-three working days.

A structural steel company, fabricating large steel beams (60 x 45 ft.) required three men, working two days to complete fitting-up operation of one unit. Assembly consisted of bolting parts by hand using a bolt in every eighth hole. The same men, using an air-powered tool, completed a unit in the amazingly short time of one hour. Here is how the air tool paid for itself in four hours of use:

The original operation required 48 man-hours (3 men, 2 days by hand). The air tool completed the job in 3 man-hours (3 men, 1 hour), thus saving 45 man-hours on the job. Divided by the saving per unit, the equipment paid itself off in 4.13 hours.

A large manufacturer of scales assembled the platform yoke and tie-bar on industrial scales by using a hand tool. The running down of sixteen $\frac{1}{8}$ x 1 1/2 in. cap screws took 1 minute 41 seconds. The company put an air-powered impact tool on the job and found that the same operation was completed in 33 seconds. The workers report less fatigue and the air tool paid for itself in 6 days.

A mid-west manufacturer of small farm implements and garden tractors found that by substituting 3 air-powered tools for hand tools he was able to cut the rate nearly one hundred per cent. per hundred units on a job involving the assembly of a mower attachment. Three tools paid for themselves in 19 days.

A steel company purchased a large tool for use in removing and applying roll bearing nuts, etc., during the scheduled tear down of a large mill. The hand method took 4 hours to complete, whereas the air-powered tool reduced the down-time to 1 1/2 hours. Thus a large saving was credited to the maintenance department. The tool paid for itself in less than 42 minutes and showed a profit on the operation.

Air and electric powered tools are used for fastening operations in countless industries and in construction work because they are light in weight, durable, safe, and easy to handle—and because they deliver maximum power per unit

(Turn to page 52.)



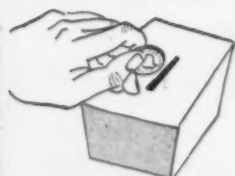
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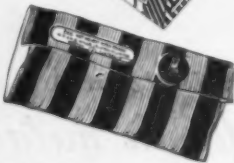
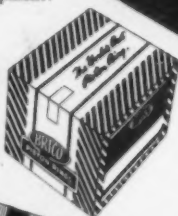
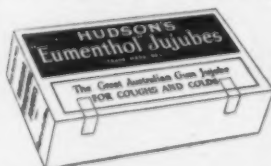
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(Continued from page 50.)
of weight. The impact unit contains means for converting torque from the motor into "rotary impacts" and for the transmission of these impacts to the socket. These

torsional impacts exert a more powerful turning effect than that produced by any other type of power tool.

More power means increase in speed, greater output, and lower

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NEW EDITION OF EXPORT CATALOGUE.

At the end of 1947, the Gauge and Tool Makers' Association of England issued an Export Catalogue with separate editions in English, French, Spanish and Portuguese, and 14,000 copies were circulated to potential overseas buyers of tools and gauges in practically every country in the world.

A second edition of the Export Catalogue is now being prepared in several languages, and will be ready for circulation at an early date.

ADELAIDE AGENCY CHANGES ADDRESS.

It is a sign of the times that capital cities are becoming so congested that some well-known businesses always hitherto "city firms" have had to move out to suburban sites even for the necessary office space, aside from warehouse space. This has now happened to Neville, Collins Ltd., who have moved from North Terrace, Adelaide (where they have been in a building owned and now taken over by the South Australian Hotel for extensions). Neville, Collins Ltd. have gone to Commercial Buildings, 142 Unley Street, Unley, opposite the Bank of Adelaide.

Here that doughty trio, Messrs. A. G. Neville, A. J. Collins, and their colleague Mr. Ferris now have their headquarters for the distribution of their important group of hardware and auto lines, rifles, vacuum flasks, etc.

Improved Platings Developments in the Resistance of Corrosion

Now that the period during which war plants have been re-converted to peace-time production is over, there has been a great extension and resumption of research in the metallurgical and chemical fields, as well as in the related branches of electrical engineering. One aspect of this that deserves mention is the development and improvement of platings and other metallic or rare metal films designed to withstand the attack of corrosive agencies.

IN the following lines a summary is given of the principal advances in these directions.

CHROMIZING.

One of the newest is salt bath chromizing. Chromizing, as is well known, is a method of impregnating metallic surfaces of the ferrous type with the element chromium, so giving them a high resistance to corrosion. Hitherto, the process employed has largely corresponded to that used for ordinary case-carburizing. In other words, the work is enclosed in a special chromium-rich mixture or compound, placed in a cylindrical furnace, and heated to a temperature in the region of 1,300 to 1,400 deg. C. in an atmosphere of hydrogen gas. There are alternative methods of chromizing, including metallic chromium or ferro-chromium and an atmosphere of H_2Cl , or an inert or reducing atmosphere with a packing of chromous chloride-ceramic. Lower temperatures can be used in these alternative processes.

In the salt bath chromizing process, says J. Lomas in an article in "Machinery Lloyd", a bath of fused salt containing chromous chloride is contained in a crucible, and all that is necessary is to insert the parts to be chromized in this. The advantages claimed for this process are that it allows of wider margins in the concentration of chromous chloride during treatment, does away with the packing of the work in a compound or mixture, and with the charging and discharging of the furnace, as well as its heating and cooling. Also it enables parts needing varying treatment times to be chromized at one and the same time. There are other advantages less important that need not be detailed here. The salt mixture employed is usually 30 per cent. chromium chloride, 40 per cent. barium chloride, 21 per cent. potassium chloride, and enough chromium flake to coat the bottom of the pot. To protect the bath against air an argon atmosphere is furnished.

One factor not so far discussed is that of costs, which appear to be no higher than those of ordinary chromizing. The efficacy of the salt bath method is largely governed by the type of material. Coatings resistant to corrosion can be formed on a considerable range of materials, but it should

be noted that the greater the depth of penetration at the lower temperature, the lower must be the carbon content of the steel. Experiments are in progress to decide the possible influence or otherwise of various elements on the rate of diffusion, but so far only silicon has been found to increase the diffusion rate. The chromizing temperature is, of course, dependent to some extent on the degree of penetration required, and the temperatures employed in most instances range from 1,000 to 1,200 deg. C.

RHENIUM.

Another interesting development is the use of the rare metal, rhenium, as a plating. Deposition is by electrolytic methods. At the moment, the process is only in the experimental stage, but is believed to be rapidly approaching commercial application. When in the form of a plating, rhenium presents a silvery appearance, and is resistant to hydrochloric acid, whilst very little effect appears to be produced upon it by sulphuric acid. The plating has a hardness of about 250 Brinell. It appears to have been established that the most suitable type of electroplating bath for rhenium is of sulphuric acid, containing 10 g/L of $KReO_4$ and sulphuric acid to give a pH of approximately 1. This produces a bright metallic deposit. With a cathode current density of 8 amp. per sq. dm. (approximately 75 to 80 amp. per sq. ft.) and a bath temperature of 70 deg. C., the cathode current efficiency is said to be in the region of 18 per cent. Other baths have been tried, such as an ammoniacal citrate bath, but none is quite so good as the sulphuric acid type. A citric acid bath has also been used.

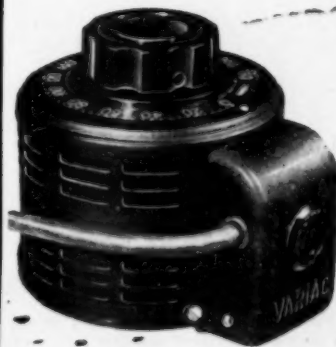
Whilst there seems to be no difficulty in electroplating bright metallic deposits of rhenium on metals the fact must be noted that none of the baths so far used has a high cathode efficiency, which varies with the concentration of the bath and the conditions of electrolysis. Another point to be noted is that rhenium has been plated on brass with the sulphuric acid bath.

TANTALUM.

Another rare metal which has been electroplated is tantalum, but so far the reports received indi-

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case that success has not attended the efforts made to develop a commercial process. If this plating could be commercially achieved, it would bid fair to rival chromium plating because of the valuable properties of tantalum, which include resistance to the majority of chemical reagents. Attempts, therefore, are still being made to electroplate this rare metal, using both water solutions and other types of plating baths.

STAINLESS STEEL

Electron diffraction studies of the structure of stainless steel's surface have been carried out, a film of sufficient thickness being prepared by subjecting the stainless steel specimen to high temperature steam in an autoclave. It has been found as a result that a solid solution (Ni, Fe CrO₂) is formed on the surface of the stainless steel, and protects the underlying layers without flaking off, because the film is united to the metal by means of the residual valence electrons, while the atomic spacing along the c-axis of the former crystal is almost the same as that along the cube edge of the stainless steel crystal.

LARGE ALUMINIUM SURFACES.

Aluminium surfaces and assemblies which are too big to be easily dealt with by means of dipping or spraying processes are now being given smooth, skin-like, protective coatings equal in performance to those given by electrolytic means. The method comprises the employment of special solutions. Two coating chemicals are applied by brush after having been first diluted in several parts of water. The work is then rinsed. Brushing must be uniform and liberal on to the cleaned surface of the metal, and the prepared solution is allowed to act for a minimum period of one minute, but not longer than five minutes, after which it is rinsed off in advance of drying. Coatings developed in this way vary to some extent from those developed by immersion or spraying, because although iridescent by reason of the thickness of the film, they are not tinted green. The new process is claimed to be virtually as efficient in protecting aluminium parts as the dip treatment.

SPECULUM METAL.

Speculum metal, which is an alloy of copper and tin, possesses an excellent appearance and a high degree of resistance to stain. It is now being commercially plated on cutlery and other domestic goods.

TIN-ZINC ALLOY.

Tin-Zinc is another alloy that successfully unites a number of the good properties of the two metals without their drawbacks, and has been successfully plated on a commercial basis during the last two years. It can be employed to advantage as an alternative to cadmium plating, particularly for electrical parts, because

(Turn to page 54.)

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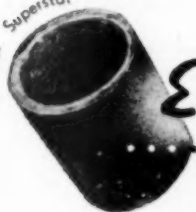
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(Continued from page 54.)

It is much lower in price than the latter process. It is in the cost of anodes and chemicals that the major part of the saving lies. The apparatus used is the same as for cadmium plating, except that heating coils are necessary. Plating may be either continuous or intermittent. The plating bath may be made of low carbon steel, as may the heating coils. The same type of cleaning process can be employed, but when the plating operation is completed, a special passivation treatment is required, which involves the introduction of an extra tank as compared to the number employed in plating with cadmium.

The composition of the tin-zinc alloy is usually from 75 to 80 per cent. tin and 20 to 25 per cent. zinc. The zinc content suffices to make the plating anodic to steel, the steel thus being protected at damaged areas of the plating as with zinc. The object of the high tin content is to enhance and ensure a high degree of resistance to corrosion. The alloy can readily be soldered, and the fact bears upon the usefulness of the plating to electrical work.

The object of the special passivation treatment is to give an even higher resistance to corrosion. This treatment consists of immersing the work for a period of a few seconds in a solution of 2 per cent. chromic acid at a temperature of 50 deg. C.

TUNGSTEN.

Much work has been done of late on the electro-deposition of alloys of tungsten, and of the metal itself. Platings so constituted have both great hardness as well as resistance to elevated temperatures. The applications for them are, at the moment, somewhat limited, but there is considered to be a wide field in the rebuilding of parts which have undergone considerable wear. For low temperature work it is doubtful if such platings will successfully depose nickel and chromium platings, but for elevated temperatures tungsten or tungsten alloy platings would offer many advantages.

Up to now it has not proved practicable to deposit tungsten metal electrolytically, but if nickel or cobalt are deposited simultaneously with tungsten, a plating with up to 50 per cent. tungsten possessing a number of the beneficial properties of tungsten can be obtained.

Another field for this type of plating is in building up dies for forming metallic parts, tools, the bores of cylinders, pistons, bearings, etc. There is scope, also, in the field of aircraft propulsion, and a point of importance is that the tungsten alloys can be employed in the electro-forming of comparatively simple complete parts, such as tubes. The great feature of these tungsten alloy platings is, however, their hardness, which can be increased by a heat treatment consisting of heating to a temperature in the region of 600 deg. C. and holding at that temperature for a period of half an hour.

The precise hardness of the alloys depends, of course, on their composition, being of the order of 600 Diamond Pyramid Hardness Number for alloys of tungsten and cobalt in which the tungsten content exceeds 30 per cent., and 775 D.P.N. for alloys of tungsten and nickel, with a tungsten content approximately as for the tungsten cobalt alloys. On the other hand, from 900 to 1,000 Diamond Pyramid Hardness Number is obtainable with alloys of tungsten and iron.

The thickness of plating that can be had is up to 1 mm., but it must be borne in mind, the article points out, that such platings lack ductility when in the cold condition, though if heated to a temperature within the range 600 to 800 deg. C., they can be softened. The precise softening temperature depends, of course, on the composition. Such treatment is, however, unsuitable for the tungsten iron alloys, which cannot be softened to any worth-while degree when heated.

BRIGHT NICKEL PLATING.

The bright nickel plating of steel is being carried out by a new process (Turn to page 69.)

Training Engineering Apprentices

Distinctive Features of a Successful Scheme Based on Practical and Elementary Psychological Considerations

The reasons for the inauguration of an apprentice training scheme may be numerous; in times of full and well-paid employment it may be the need to attract an adequate number of young trainees, especially in the trades which have only a limited appeal, or it may be that rival organizations have a scheme and the spirit of competition induces a desire to be on at least level terms. But in most instances there is an earnest endeavour to put on a more or less scientific basis the knowledge gained from the somewhat hit-and-miss efforts of the past and to ensure that the highest possible skill is developed together with the greatest possible satisfaction for the man on the job.

A personnel manager, in dealing with the day-to-day labour problems of an industrial organization, frequently hears from the man or woman who has come to him with a difficulty: "If only I had been allowed to choose my job," or: "If only I had been doing something different."

Some years ago, a leading British firm carried out an investigation into two questions:—(a) How do most tradesmen come to be apprenticed to their particular trade? and (b) What was the company's normal method of engaging apprentices?

In an article in "The Times Review of Industry", Frank Shepherd, the company's personnel manager, says that the answers to (a) were many and various but, in general, they fell into the following categories:—

1. A drift into the only job available;
2. Domestic economic circumstances which required the job with the highest pay;
3. A wish to do the same job as the father, brother, or an older schoolfellow;
4. Insistence by the father that his son's job should or should not be different from his own;
5. When school and technical training had shown an ability which had led to a specific choice of training.

It was noted that, except in the last instance, the boy had had little opportunity of finding out whether

the apprenticeship in which he was engaged was, in fact, the type of job most suited to his ability and temperament. In many instances he put up with it and became a good tradesman, but often in later years there was a feeling that he could have done some other job much better; the result was a realization that he was a square peg in a round hole. Every manager or foreman has known some men who are good fellows but indifferent craftsmen, and who are eventually involved in recurring troubles caused by conscious or unconscious dissatisfaction with their jobs.

An example may illustrate the general method of engagement used by the company. The Juvenile Employment Bureau of the Ministry of Labour was notified of two vacancies for apprentice fitters, and a juvenile officer, with his limited knowledge gained by questioning the boys, would submit perhaps six of them for interview. The boys would turn up for interview with a school report and with clean clothes and faces for the occasion. The labour manager, works manager, or foreman would look them over and from observation, questioning, and examination of the school report select the two most promising boys. Often, if the boy was asked: "Why do you want to be an apprentice fitter?" it was found that he had little or no knowledge of the actual job but he had been told by his father or by a schoolfellow that it

was the sort of job he would like. Many considerations may influence a boy's mind: to take an actual example, a boy who had left school the previous term and was now engaged as an apprentice fitter had influenced the mind of the new boy because he now wore long trousers and smoked. The new boy connected these signs of manhood with the job of apprentice fitter.

After the above-mentioned investigation it was realized that, in spite of the general improvement in educational facilities, a boy's future was being determined by fortuitous methods. It was therefore decided that a scheme was necessary which not only gave the boy the best possible training but also made an attempt to see that

he was apprenticed to the trade for which he was most suited.

In setting up their own apprenticeship training system many good schemes were examined and the firm was fortunate in being able to inspect the arrangements which other concerns had already made. They found in every instance that boys were interviewed by some form of selection board and although every assistance was given to help the boy make up his own mind he was nevertheless engaged as an apprentice to a particular trade before being sent to the training school. Some firms used psychological and adaptability tests with good results, but it was felt that they proved only whether the boy would make a good apprentice for the trade for which

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he was being examined; the tests did not necessarily prove that he was not better suited to some other job. The author's firm had held practical evening classes for apprentices (selected by the methods already mentioned) for some 40 years; invariably, however, the boy was already definitely appointed to a particular trade and the practical classes were concerned only with the technique of that trade.

When all the evidence had been sifted assistance was obtained from works managers and senior trade union representatives whose findings were eventually placed before the board of directors, who, in their turn, unanimously approved the basic principles of the scheme.

The fundamental factor, on which the whole scheme was based, was that as boys entering the industry had little to guide them when choosing a trade they should not be engaged primarily as apprentice fitters, or pattern-makers, or moulders, but should be engaged as general engineering apprentices and given a year's training before being finally placed in the craft of their own selection. In the meantime, authorization had been given for the equipment of suitable premises for the school. It had a large assembly hall, with a stage, surrounded by classrooms to be used as lecture rooms; a pattern shop with band-saw, lathe, and benches; a moulding shop with sandbins, moulding boxes, and a miniature melting unit; a machine shop equipped with drilling machine, lathe, miller and slotter, as well as a bench and vices for fitting work; and a plate shop with welding tackle.

All the partitions were half glass and the premises were painted in pleasing colours with a large replica of the firm's crest on the wall behind the stage; the walls were hung with photographs showing the products of the firm in use all over the world.

At the inaugural stage representatives from juvenile employment bureaux, local education authorities, and schools were invited to a meeting where the scheme was explained to them and their support obtained. Visits to the works by senior classes from the local schools were also arranged.

Estimates of apprentice requirements were made by each of the production managers 12 months ahead; at that time the total was 53, and the vacancies covered the following trades:—Patternmaking, moulding (iron and steel), fitting, turning, die-sinking, electrical engineering, plumbing, template-making, plating, welding, riveting, blacksmithing, anglesmithing, joinery, and some semi-skilled occupations. Juvenile employment offices and schools were informed of the vacancies and an announcement was made in the local press. Altogether 120 applications in writing were received.

Interviewing panels were then set up, each consisting of a works manager and a senior work-

(Turn to page 61.)

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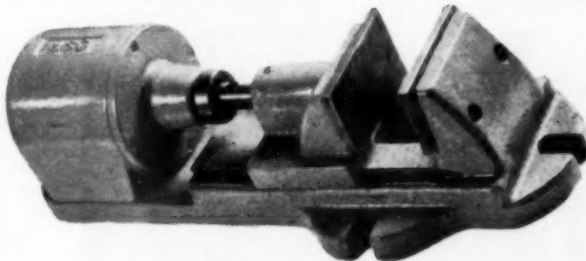
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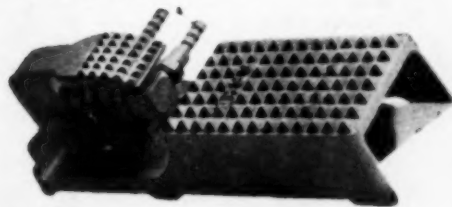


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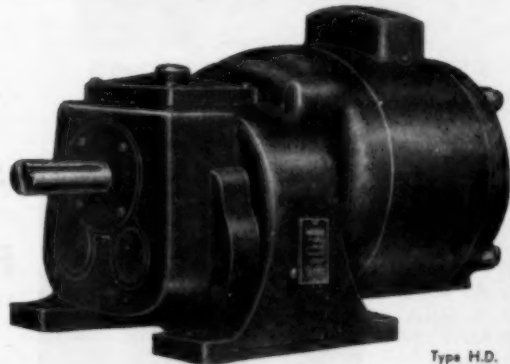


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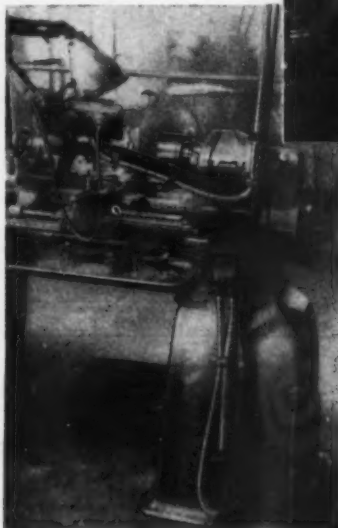
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(Continued from page 58.)

man, whose task was to find the right types and to make sure the boys understood the scheme. When the requisite number of boys had been selected a letter was sent to their parents inviting them to attend at the school with their sons so that they might also have full knowledge of the proposed training scheme.

On the first occasion at least one parent, and often both, attended for every boy. After they had inspected the classrooms, they were addressed by the personnel manager on the full implications of the scheme. After a general introduction the scheme was outlined and its objects stated as follows:

To facilitate the transition period from school class-room to industry;

To accustom the boy to a factory environment;

To create an appreciation of the firm's history and achievements;

To promote a feeling of the dignity of craftsmanship and its usefulness to the community;

To give a reasonably clear idea of the products to be made and their use;

To explain the teamwork necessary to production;

To ensure that after the 12 months' training the boy can enter and take part enthusiastically in the trade of his choice.

The firm undertook to engage a number of boys to be enrolled as general engineering apprentices for a period of 12 months. During the first two or three days their records were prepared, including medical inspection by the works physician and details of their school standards, etc. They were also taken round the plant, introduced to the various managers and foremen, and told something of the historical background of the company. They were then divided into "houses" for competition. The whole of the works was divided into six sections, each consisting of various shops employing different major trades; the object was that each boy should spend two months in each section. While in the shops he worked with tradesmen and was encouraged to take part in the various operations. The itinerary was so arranged that each boy would attend the works school with his own house on one day each week.

The school has its own apprentice supervisor and one assistant; both are skilled tradesmen and have taken local courses in teaching. Their duties are to explain, in an elementary but practical way, the methods employed in the various crafts. Engineering drawings—more particularly fundamental appreciation of engineering drawings—is an essential feature of this early training. Talks are also given on accident prevention, fire protection, and other general matters connected with the boy's life in the works, while technical talks are illustrated with sound films, film strip and epidiascope. At least one afternoon in the week all the boys are assembled for physical training under proper instruction with the usual equipment; and inter-house cricket and



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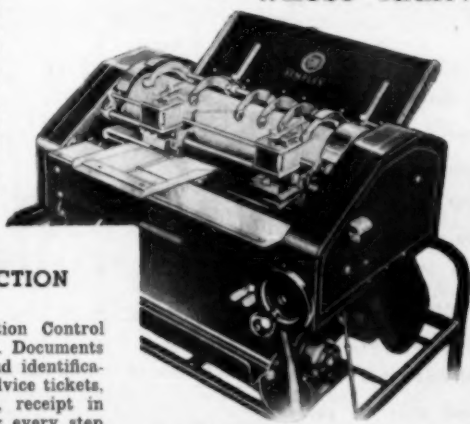
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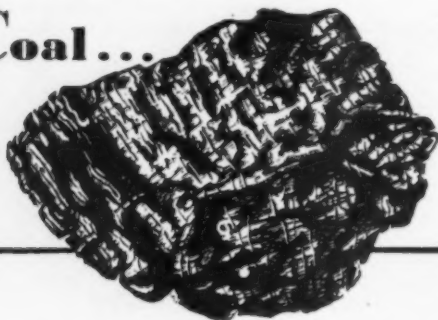
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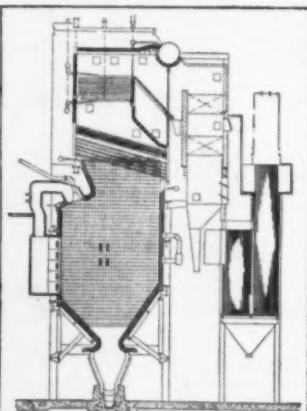
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Throughout the period of training a careful log is kept of reports by the shop foremen, the boy's aptitude for and interest in the various trades while at school, conduct, discipline, and attendance. A summary of these reports is made every three months, and a copy sent to parents, so that they may know of their son's progress; if the progress is not satisfactory, the parents are asked to assist in improving whatever may be at fault or, in extreme cases, requested to take their son away.

During the 12 months' period of training the boys use a special apprenticeship school clock for the recording of time, and are paid on the nationally agreed wage-scale for engineering apprentices. The trade unions concerned agreed that this year's training should be credited as one year of the boy's apprenticeship to whatever craft he finally undertook; thus a boy entering at 16 would be enabled to complete his apprenticeship at the age of 21.

At the end of the 12 months the boy was asked his opinion about which trade he was best equipped to follow, and after making his decision all his reports concerning the periods he had worked at that trade were checked. If necessary, he was asked to take a written, practical, and oral examination. If the results of this examination proved satisfactory, he was then accredited to the apprenticeship of his choice. Should he fail to make the required grade, he then had the opportunity of a second choice. If in his second attempt he proved successful he forthwith adopted that trade, but if he failed again there was usually no third choice,

The boy then undertook a semi-skilled occupation or he could leave. If he chose to leave he was given a year's certificate of training.

As soon as the boy's apprenticeship was determined arrangements were made for him to attend a continuation class either at evening school or during the day and every encouragement was given for him to take the proper courses to the highest possible standard, scholarships being awarded in certain instances for full-time attendance at the technical college with full pay from the company.

In the first year of the scheme it was found that if, at the end of the explanatory talk by the personnel manager, the parents were of the opinion that the scheme outlined was suitable for their son, they were asked to let the boy line up on one side of the hall. If, however, the parents decided that they wanted a specific apprenticeship right at the beginning the boys should line up on the other side.

It was found that all the parents decided that they would leave their boys in the scheme. During the first year many mistakes had to be rectified, but because of the ready co-operation of the works management and the tradesmen all the boys were placed in trades of their own choice.

For the second year's intake of apprentices there were 72 vacancies, for which no fewer than 230 applications were received. The same process was followed and again improvements were made. Now, in the fourth year, the article continues, it can be said with confidence that the whole training scheme is a proved success. The

(Turn to page 64.)

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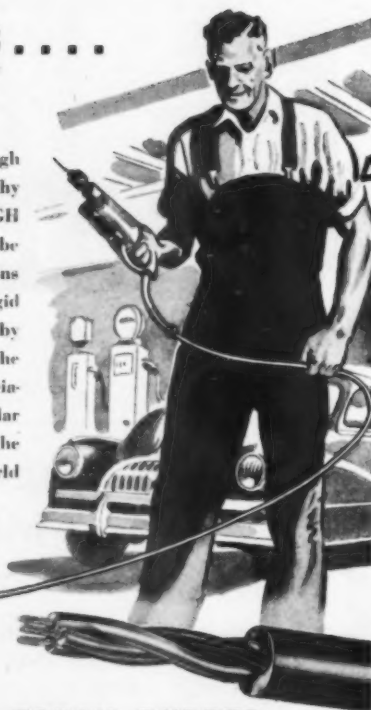
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(Continued from page 62.)
drawing offices are now included in the scheme and there is no manager or foreman in the organization who would revert to the old methods; they all prefer apprentices who have passed through the school.

It may be said that there will always be a greater demand for entry into some trades than for others. The author's company is fortunate in having a variety of trades, and at the interviews the firm endeavours to select various types of boy from the lower

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Particulars of the necessary procedure will be supplied by any Patent Attorney practising in the Commonwealth.

PATENT SPECIFICATIONS ACCEPTED

KIT BAG.

138,515.—A. G. Morgan.

A method of making a kit bag which includes the steps of:—(a) forming two substantially rectangular wall blanks of body material, (b) joining the end margins of one of said wall blanks to the end margins of the other of said wall blanks thereby forming an open-ended sleeve, (c) forming a substantially rectangular floor blank of body material, (d) turning an end marginal portion of said sleeve inwardly of said sleeve to form a flange, and (e) joining the edge margins of said floor blank to said flange.

DISHWASHING APPARATUS.

138,516.—C. Hollerith.

Cleaning or washing apparatus wherein the vat is provided with a rotary baffle adapted to repel the liquid within the vat from the discharge opening when the impeller or agitator device is in

operation to circulate the liquid within the vat.

WINDOW MOUNTING FOR VEHICLES.

138,519.—B. C. Fitzpatrick.

In combination, a structure having an opening, a closure panel for said opening, said structure at the opening having a panel mounting flange extending inwardly in substantially the plane of the panel at its adjacent edge but ending in spaced relation thereto, a mounting strip of elastic deformably material filling said space and having a pair of oppositely disposed grooves to receive adjacent edges of the flange and panel, respectively, and a lateral groove in the side thereof, a spreader insert for the last mentioned groove to constrict said pair of grooves, a reveal moulding fitted to the exposed face of said mounting strip in overlapping and concealing relation to said spreader insert and retainer means removably locating the moulding strip.

IMPROVED HOSE COUPLING.

138,791.—H. S. Kittel.

An improved hose coupling comprises a threaded tubular member

tapered down in diameter from a point intermediate its length towards the ends, and ferrules adapted to be positioned over the hose ends so that when the tubular member is screwed into the hose ends a sealed coupling is formed.

BEARINGS FOR DRYING AND CALENDERING CYLINDERS.

138,541.—J. Dilworth.

A doll head bearing for the ends of rollers or cylinders to which hot air, steam or water is supplied wherein an effective seal is formed by a flexible washer or packing located between the outer end of the bearing bush or the ball bearing in which the end of the roller, cylinder or mandrel rotates and the steam or air pipe, the washer or packing being pressed against the peripheral surface of the cylinder, or roller, or mandrel by a spring ring surrounding it.

PLUG FOR VENTING CASKS.

138,822.—C. B. Hollis.

In a venting plug for kegs, casks and the like having an insert portion, a head assembly and an L-shaped bore, the improve-

ments consisting of a stepped bore formed in the main body portion of said head assembly and communicating with said L-shaped bore and means formed in said stepped bore for disposing a plurality of valves therein and for connecting the device to a source of pressurised gas supply whereby atmospheric air or pressurised gas is admitted to said L-shaped bore.

IMPROVED ICE REFRIGERATOR.

138,542.—A. S. Hopkins.

An improved ice refrigerator, characterized by having a body structure cylindrical in shape comprising an outer shell of metal sheeting appropriately insulated, and an inner shell which constitutes an ice chamber arranged above a food compartment which is located above an ice water tank within the body structure, supported on a wooden stand with three legs and castors, the body structure being encircled by chrome metal bands at various openings.

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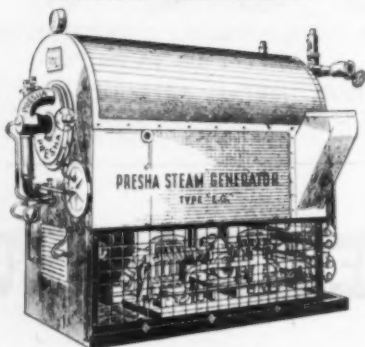
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FOLDING TYPE ARMCHAIRS. 138,525.—K. Gielow.

A folding armchair comprising a seat frame, a back rest frame, leg frames and arm rests characterised in that the front legs are extended upwardly above the seat frame and have pivoted to their upper ends backwardly extending, substantially horizontal, arm rests which are in turn pivoted to the vertical members of the back rest at points intermediate the upper and lower ends thereof; the several frames being so interconnected pivotally that when the back rest frame is drawn forwardly and downwardly towards the seat frame the whole of the frames fold into superimposed and nested relationship and form a substantially flat folded structure free from projections.

IMPROVED PUMP.

138,525.—R. W. Williams.

Pumping means comprising a pump cylinder having a valve controlled inlet at its outer end and a valve controlled outlet leading from it at a distance away from such inlet and having an enclosed inner end extending beyond such outlet in which a compressible and expandable body, suitably air, is enclosed, a plunger fitted within the outer end of the cylinder between the said inlet and the outlet, designed in its actuation to draw liquid into the outer end of the cylinder and to transfer it under pressure to the inside of the plunger, and means for operating such plunger to cause it to be reciprocated for a distance between such inlet and outlet.

APPARATUS FOR HEATING.

138,526.—G. W. F. Richards and D. H. King.

Claim 1. Heating apparatus embodying a burner head mounted over a burner bowl fed from a reservoir of liquid fuel enclosed in a casing having an access door that has to be opened to allow the burner to be lighted, characterised by a linkage or cam device

connected to the door and arranged to lift the burner head clear of the burner bowl when the door is opened.

STEEL PLATE FOR ATTACHING WALL SHEETING.

138,528.—E. J. Millar.

In attaching wall sheeting to pre-cast columns or studs a continuous steel plate fitted over the wall sheeting at the vertical abutments thereof and secured by screws in engagement with a channel shaped metal fitting pre-cast in concrete columns or studs.

In attaching wall sheeting to pre-cast columns or studs non-continuous steel plates fitted over the wall sheeting at spaced distances and secured by screws in engagement with channel shaped metal fitting pre-cast in concrete columns or studs.

PRESSURE INDICATOR.

138,527.—National Pressure Cooker Co.

A device for indicating pressure, and for releasing pressure which is in excess of a predetermined amount, said device being adapted to rest on the open vertical upper end of a pressure vent pipe of a pressure cooker or the like, said device comprising a weight member having a vertical passageway through it, adapted to fit over the upper end of the pressure vent pipe, which passageway has at the upper end a smaller diameter which opens into a space which is closed by a flexible diaphragm on which diaphragm a pressure indicating member is resting, the pressure indicating member being provided with at least one mark, which in conformity with its position with regard to a fixed point, indicates the pressure existing under the diaphragm, characterised in that the device is adapted to fit over the open end of the pressure vent pipe of the pressure cooker and is adapted, by gravity, to be seated on the open end of said pipe and hold pressure, below said predetermined amount, in said

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pressure cooker, and further characterized in that the diaphragm, when deflated, seats at the upper surface of the weight and over the upper end of the passageway which surface forms a stop therebeneath, and in that there is a passageway extending between the smaller diameter of the passageway and the space, which space is defined by the diaphragm and the upper surface of the weight, so that pressure may be admitted over all of the free area of the diaphragm.

**INJECTOR OR APPLICATOR
FOR UNGUENTS.**

138,535.—J. W. Earnshaw.

An injector or applicator, for unguents or the like, which has a plunger and a plunger rod and a dosage barrel which latter has a discharge orifice at one of its ends while its other end is screwed and adapted to detachably receive screwed to it, a screw-threaded portion of a holed bridging end piece which forms part of a framework or guide for the said plunger rod, said framework or guide including a pair of parallelly disposed rod portions oppositely disposed ends of which are each associated with a holed bridging end piece, the two said bridging end pieces being adapted to slidably receive through them the said plunger rod of the said plunger.

FAN FOR TRIMMING GRAIN.
138,537.—T. O. Nicholls.

An improved grain trimming fan comprising the combination of a shaft or spindle; a boss mounted thereon; a plurality of fan blades connected to and radiating from the boss; and a continuous baffle that divides the blades into two parts, a large part which is in direct communication with the air intake, and a small blanketed part which is not in direct communication with the air from the intake side.

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**TRADE MARK
APPLICATIONS**

96,042. "Tylose." Methyl cellulose, being a chemical substance used in manufacture.—Bayer Pharma. Pty. Limited, 58 Young Street, Sydney, N.S.W.

96,581. "Buffalo." Paints, varnishes, oils, etc.—British Paints (Australia) Pty. Limited, Sutherland Avenue, Paddington, Sydney, N.S.W.

97,722. "Colokote." Paint to be mixed with cement resulting in

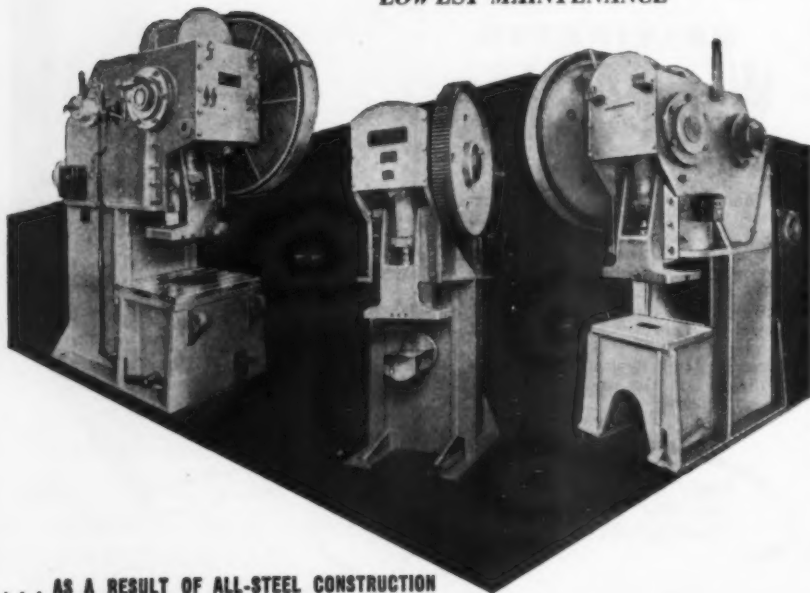
coloured concrete or plaster when used.—Pacific Chemical & Mineral Development Company Limited, Yorkshire House, Shortland Street, Auckland, New Zealand.

97,723. "Sempaint." Paint to be mixed with cement resulting in



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WILLIAM ARTHUR WILLIAMS, the proprietor of Australian Patent No. 130,050, for "Improvements in or relating to the Driving Gear of Multi-cylinder Reciprocating-piston Engines", invites enquiries from persons interested in manufacturing or using the patented invention in Australia under licence or other arrangement. Address enquiries to A. WALLACE SMITH, 358 Collins Street, Melbourne.

"COATED ABRASIVES."
Commonwealth Patent No. 125,439. The Patentees of this invention desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to this end from persons and firms interested.

Address inquiries to
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"IMPROVEMENTS IN OR RELATING TO METHOD OF INOCULATING A LIQUID CULTURE MEDIUM WITH MOULD SPORES."

Commonwealth Patent No. 125,893. The patentees of this invention desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to this end from persons and firms interested.

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"IMPROVEMENTS IN OR RELATING TO METHOD OF OPERATING A STEAM SYSTEM AND APPARATUS THEREFORE."

Commonwealth Patent No. 126,152. The Patentees of this invention desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to this end from persons and firms interested.

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Patent Attorneys, of 16-18 O'Connell Street, Sydney.

"AUTOMATIC CLOTH LAYING-UP MACHINES."

Commonwealth Patent No. 125,724. The Patentees of this invention desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to this end from persons and firms interested.

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93.536. "Sovacide." Aromatic petroleum oils including solvents for dichloro diphenyl trichloroethane (DDT) and other insecticides.—Vacuum Oil Company Proprietary Limited, 29 Market Street, Melbourne, Victoria.

96.930. "Avioprocil." Chemical substances used for agricultural, horticultural, veterinary and sanitary purposes.—Imperial Chemical (Pharmaceuticals) Limited, Wexham Road, Slough, Buckinghamshire, England.

97.713. "Dollo." Soil improver for fertilizing purposes.—Western Fertilizers Pty. Limited, 12 O'Connell Street, Sydney, N.S.W.

97.596. "Ni-Span." Wrought or unwrought base metal alloys.—Henry Wiggin & Company Limited, Grosvenor House, Park Lane, London, W.1, England.

95.277. A design of the word "Hurricane." Axial flow fans, radial flow fans.—Wessberg & Tulander Pty. Ltd., 140-144 Queen Street, Alexandria, Sydney, N.S.W.

97.121. "Vacu-blast." Blast cleaning appliances and parts therefor.—Vacu-Blast (Aust.) Proprietary Limited, 360 Collins Street, Melbourne, Victoria.

96.065. "Bricoflex." Piston rings.—Brico (Australia) Pty. Limited, 41-57 Mallett Street, Camperdown, Sydney, N.S.W.

96.781. "Olymprene." Insulated cables and flexibles.—The Olympic Tyre and Rubber Company Limited, 68 Cross Street, Footscray, Victoria.

97.890. "Index." Storage batteries.—The Electric Storage Battery Company, Nineteenth Street and Allegheny Avenue, Philadelphia, Pennsylvania, U.S.A.

95.551. "Norstel." Temporary scaffolding tube and bar couplings and clamps.—Northern Steel Scaffolding & Engineering Co. Limited, 10 Old Cavendish Street, London, England.

97.790. "Mafreeka." Piece goods wholly or mainly of cotton.—Logan, Muckelt & Company Limited, 14 St. Peter's Square, Manchester 2, England.

93.781. "Clematis." All wool velour coating.—John Crowther & Sons (Millsbridge) Limited, Union Mills, Tanyard Road, Millsbridge, Huddersfield, Yorkshire, England.

Improved Plating

(Continued from page 56.)

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organic brighteners are added, one liquid and one solid, as is done with the steel-plating process, and in addition there is added a non-pitting agent in the form of a paste. Rolled or cast high purity nickel anodes are employed. A typical process cycle includes the deposition of an undercoating of copper from a Rochelle salt or a bright copper solution.

**MOLYBDENUM AND NICKEL
MOLYBDENUM ALLOYS.**

The electro-deposition of molybdenum and nickel molybdenum alloys has also been attempted. In carrying out this operation, copper, iron or nickel sheet cathodes are employed, and platinum foil or ashless projector carbon anodes, with, for example, an aqueous solution of molybdic acids containing high concentrations of salts, e.g., ammonium and potassium, sodium or mixed ammonium-potassium acetates. The deposits obtained are said to be characterised by excellent adherence to the base metal, and the physical appearance, at a thickness of approximately 0.001 mm., is that of a smooth white lustrous metal. The identity of the cathode material does not appear to be critical. Cathode current efficiency is, however, low, even under the best conditions, the maximum obtainable from an acetate bath being only 2.3 per cent.

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Metallic surfaces are usually plated either to give them better corrosion resistance or to make them more attractive in appearance. Stainless steels, however, are rarely plated to give them greater resistance to corrosion, because this resistance is inherent in the material itself. For aesthetic reasons, however, it is sometimes desirable to give them a gold or silver plating, e.g., in tableware, fountain pens, etc. The difficulty of plating these steels is that their surfaces are in a passivated condition, and do not easily accept an adherent plating. This surface has, therefore, to be removed before any plating operation can be undertaken, and its reformation prevented, by a pickling process. Usually either a copper, nickel or zinc intermediate coating is deposited during the actual elimination of the passivated skin, this coating being thick enough and of a quality such that adequate adherence of the final coating is ensured.

For silver coating stainless steels, a flash of iron is used to improve adhesion. A copper underlayer and a nickel undercoating have also been used. The final silver coating when the iron flash is used is made from a standard bath. Firmly adhering deposits are obtained, which do not peel on repeated bending.

For gold plating stainless steels, a copper underlayer, chemically deposited, is not usable, and in one process an interplating of gold itself is employed, which has given good results with a wide range of stainless steels, and has been successfully adapted to the gold plating of nickel chromium alloys.

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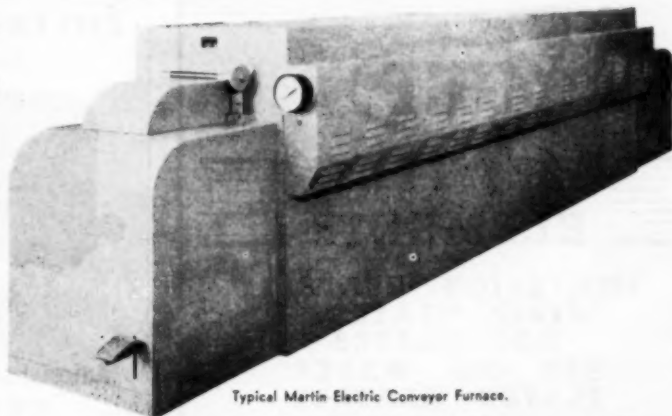
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minium Co. Pty. Ltd., £3,732/19/8.

Brass Bar (File No. C4/371/
343). Extruded Metals Pty. Ltd.,
£5,617/18/5.

Brass Bar (File No. C4/371/
343). Austral Bronze Co. Pty.
Ltd., £562/1/2.

Bright Mild Steel (File No. C4/
371/347). Bruntons Bright Steel
Pty. Ltd., £171/14/-.

Magnifying Illuminated Lens
(File No. C4/376/51). Townson &
Mercer (Vic.) Pty. Ltd., £94/8/-.

Magnifying Illuminated Lens
(File No. C4/376/51). N. H. Se-
ward Pty. Ltd., £296/9/-.

Polishing Brushes (File No. C-
4/157/57). Briscoe & Co. Ltd.,
£330/12/-.

Aluminium Canisters (File No.
C4/175/108). Ace Kitchenware
Pty. Ltd., £51/3/9.

Aluminium Canisters (File No.
C4/175/108). F. J. Brandt, £200;
W. Gartner, £225.

Fibre Mattresses (File No. C4/
266/256). Bruce Pie Industries
Ltd., £2,903/1/3.

Red Lead (File No. C4/178/98).
Commonwealth Litharge & Red
Lead Pty. Ltd., £512/3/3.

Horizontal, Boring, Milling,
Facing, Drilling and Tapping Ma-
chine (File No. C4/313/283). Mc-
Phersons Ltd., £11,200.

Polishing Machine (File No. C-
4/313/306). A. E. Supplies Pty.
Ltd., £77/15/-.

Height Gauge (File No. C4/313/
306). James Walker (Walker
Hardware Stores Pty. Ltd.), £72/
12/-.

Furniture (File No. C4/350/70).
Jason Metal Furniture Ltd.,
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Coffee Tables (File No. C4/350/
70). Jason Metal Furniture Ltd.,
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23). A. Simpson & Son Ltd.,
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Soyler Stove Bodies (File No. C-
4/362/59). F. G. Kerr & Co. Pty.
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No. C4/362/59). McIlwraith In-
dustries Pty. Ltd., £1,220/16/5.

Aluminium Alloy Bar (File No.
C4/371/358). Australian Alumin-
ium Co. Pty. Ltd., £649/13/1.

Aluminium Alloy Bar (File No.
C4/371/358). Gilbert Lodge & Co.
Ltd., £2,323/17/10.

Nylon Hair Brushes (File No.
C4/157/58). Hindes (Aust.) Ltd.,
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Blacking Brushes (File No. C-
4/157/60). Thos. Mitchell & Co.
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Board, Buff (File No. C4/179/
107). Edwards Dunlop & Co. Ltd.,
£60/12/8.

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Chemical Industries of Aust. &
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rison, £2,136/5/10.

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Cyclone Forgings Pty. Ltd.,
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10/-.

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loy (File No. C4/371/375). Special-
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£190.

Galvanised Washers (File No. C-
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Pty. Ltd., £284/7/6.

Smoke Containers (File No. C-
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Bars (File No. C4/371/352). Com-
monwealth Steel Co. Ltd., £506/
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Motor Spare Parts (File No. C/4/302/119). P. M. Stedman & Co., £4,370/8/4; Northern Spare Parts Co., £6,920/9/5; and Bradley Bros. Ltd., £1,721/5/-.

Shoe and Lining Assembly Brake (File No. C/4/302/119). Industry Odd Parts Pty. Ltd., £208/6/5.

Motor Spare Parts (File No. C/4/302/119). P. J. Taylor (Newcastle) Pty. Ltd., £5,350/12/6.

Motor Spare Parts (File No. C/4/302/119). Westcott, Hazell & Co. Ltd., £400.

Aluminium Sheet (File No. C/4/371/406). Australian Aluminium Co. Pty. Ltd., £2,489/9/11.

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Wooden Cots (File No. C/4/159/88). Jas. A. Munro Pty. Ltd., £157/10/-.

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Surface Tables and Stands (File No. C/4/313/297). Wing Gauge & Instrument Co., £319/16/3.

Drilling Machine (File No. C/4/313/324). Norman N. Benson, £620.

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(Continued from page 72.)

Cotton Cleaning Rags (File No. C.4/250/134). Gilbert Lodge & Co. Ltd., £283/6/8.

Poplin Pyjama Suits (File No. C.4/251/88). Crystal Clothing Industries Ltd., £3,031/17/8.

Poplin Pyjama Suits (File No. C.4/251/88). L. H. Jedwab & Sons, £1,756/5/-; W. Nader, £5,227/4/-; Reliance Manufacturing Co., £1,135; Westralian Farmers Co-operative Ltd., £1,115/9/-; A. E. Naylor, £445/14/5.

Khaki Pullover Jerseys (File No. C.4/255/28). Bruce Pie Industries Pty. Ltd., £3,750.

Pillows (File No. C.4/2266/256). C. C. Rawson Ltd., £1,882/5/10.

Truck Bodies (File No. C.4/303/95). F. N. Syme, £2,875.

Air Circulation Tempering Furnace (File No. C.4/307/277). Birlec Ltd., £370.

Armourers and Magazine Tools (File No. C.4/313/269). Wing Gauge & Instrument Co., £413/10/9.

Armourers and Magazine Tools (File No. C.4/313/269). Sheffield Corporation of Australia Pty. Ltd., £514/10/-.

Bicycles, Commercial, Roadster (File No. C.4/314/10). General Accessories Pty. Ltd., £2,281/17/6.

Settees, Officers' (File No. C.4/350/70). National Art Metal Co. Pty. Ltd., £9,314/6/6.

Arm Chairs (File No. C.4/350/70). National Art Metal Co. Pty. Ltd., £47,193/12/9.

Coffee Tables (File No. C.4/350/70). National Art Metal Co. Pty. Ltd., £3,190/8/-.

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Coal Handling Equipment (Spec. 1263). Malcolm Moore (N.S.W.) Pty. Ltd., £64,101/10/-, for Lake Macquarie Power Station.

Western Precipitation Multiclane Dust Collectors (five), Type B.V.G., size 96-8, to Spec. 1252. W. G. Crossle & Co. (N.S.W.) Pty. Ltd., £15,200.

Rectifier Units, 4,000 KW, and Energy Dissipating Units for 1,500 V. Railway Traction, to Spec. No. 1258; 15 Rectifier Units and 5 Energy Dissipating Units. Australian General Electric Pty. Ltd.,

£686,215/18/6; and 15 Rectifier Units and 3 Energy Dissipating Units, The English Electric Co. Ltd., £606,317/6/3, for Sydney to Lithgow Electrification.

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Concrete Mixer. Armstrong-Holland Pty. Ltd., £215/11/-.

Electric Siren. Electronic Industries Imports Pty. Ltd., £20.

Bar Mat Reinforcement. A.R.C. Engineering Co. Pty. Ltd., £621/6/6.

Table Top Lorries. W. T. Coggins Pty. Ltd., £2,980/12/-.

Marine Bonded Plywood. Leopold Barnett Pty. Ltd., £55/12/2.

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cable or hydraulic operation, £1,230. Brown Equipment Sales Ltd., for Kyogle Shire Council.

Cement Lining of C.I. Pipes in situ., £2,702. Cement Linings Pty. Ltd., for Southern Riverina County Council.

Garbage Bodies, £1,886; Body to L.162 International Truck Chassis, £417. Peters Bros., Wade & Allison path. (Con. 5HC/50), £1,787. Sharpe & Dawson, for Drummoyn Municipal Council.

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

Oil Circuit Breakers (Con. 58,977). Australian General Elec-

tric Pty. Ltd., Electrical Equipment of Australia Pty. Ltd. Rates.

Auxiliary Transformers (Con. 58,584). Australian General Electric Pty. Ltd. Rates.

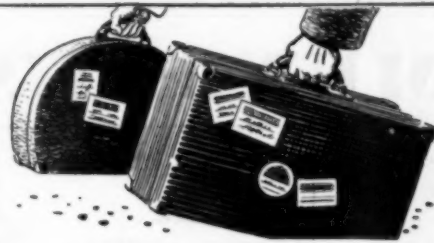
Roller Bearings (Con. 58,594). The S.K.F. Ball Bearing (Aust.) Pty. Ltd. Rates.

Galvanised Iron Sheets (Con. 58,608). Kenneth H. Brock & Son. Rates.

DEPARTMENT OF EDUCATION.

Gestetner Elec. Duplicating Machine, £155. Gestetner Pty. Ltd.

Chassis and engine, 1934 Dodge, £250. P. P. Goulet.



Going places?

It is risky to carry too much cash when travelling. The modern, safe means of payment for travellers is Bank of New South Wales Travellers' Cheques.



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STATE RIVERS AND WATER SUPPLY COMMISSION.

Sewer pipes and fittings, £2,110. Martin Stoneware Pipe Ltd. (Amended order.)

Sewer pipes, £2,545. Barker Sons & Nicholls Pty. Ltd. (Amended order.)

Cement pipes, purchase of, £22,500. James Hardie & Co. Pty. Ltd.

Diesel engines, three, £2,700. Southern Cross Windmills and Engines Pty. Ltd.

Briscoe ditcher, model C7, £3,900. William Adams & Co. Ltd. Faucet sluice valves, c.i., 800, £10,300. Miller Bros. Ironworks.

Concrete pipes, purchase of, £2,700. Humes Ltd.

Portland cement, 1,000 tons, £13,100. Gollin & Co. Pty. Ltd.

Crawler tractor, "International" TD24, with attachments, £10,718. Victorian Industrial Sales Service.

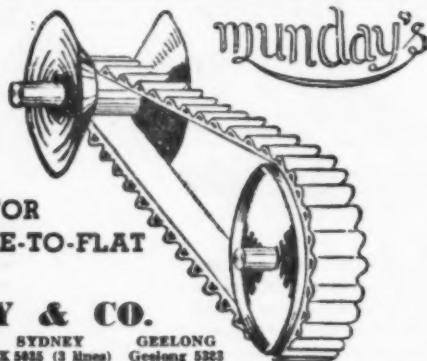
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SERVICE

Spare parts, for tractors, £2,400.
Loscarn Pty. Ltd.

Detonators, 50,000, with 144 in.
wires, £3,500. Dalgely & Co. Ltd.
Spare parts, for model "D" Har-
man dragline excavators, £2,200.

A. T. Harman & Sons Pty. Ltd.
Bolts and nuts, £5,900. Gollin
& Co. Pty. Ltd.

Hydraulic scoop operating units,
Model BIVT 21, £5,350. British
Diesel Tractor Co.

Tyres, 21.00 x 25 x 20 ply,
18, with tubes, £7,000. Goodyear
Tyre & Rubber Co. (Aust.) Ltd.

Asbestos cement piping, 126 m.,
£152,250. Societa Anonima Ce-
mento Amianto.

Ventilating duct, 18 in. dia.,
10,000 ft., £8,200. A. G. Way &
Co. Pty. Ltd.

PUBLIC WORKS DEPART- MENT.

Pre-locks, for Passenger Lifts,
Police Headquarters. Loft Eng.
Pty. Ltd., £1,080.

Stainless Steel Sink, for Tech-
nical School, Brighton. L. J. Mor-
gan, £668/10/-.

Flywire Window Screens, for
School of Mines. R. Hinks,
£28/10/-.

Stainless Steel Sink, for Mal-
vern East. Griffiths Bros., £55.

Flywire Screens. J. A. Ander-
son, £36.

Bronze Letters to Name Panel,
for Seymour High School. R. H.
Morris, £34/10/-.

Ventilating System, for Wangar-
atta Technical School. Ross's
Pty. Ltd., £183/12/-.

Scraper Mats. Wangaratta
Joinery Works, £31/10/-.

Pumping Machinery, for Water
Supply at Learmonth Police Sta-
tion. M. Ellis, £101/12/11.

Automatic Telephone System,
for Mental Hospital, at Janefield.
Telephone Construction and Main-
tenance Co., £2,300.

MISCELLANEOUS.

Front End Loader, Hydraulically
Operated, Malcolm Moore, on
Fordson Major (Kerosene) Trac-
tor, £1,500. Malcolm Moore Pty.
Ltd., for Tambo Shire Council.

Trenching and laying 6 in. asbes-
tos cement pipes and c.i. fittings,
£604. Gardner & Morrison, for
Warragul Waterworks Trust.

Power grader, kerosene operator
motor, £2,385. Malcolm Moore Pty.
Ltd., for Bannockburn Shire Coun-
cil.

Road roller. Tutt, Bryant Pty.
Ltd.; bitumen sprayer. Tutt,
Bryant Pty. Ltd.; Trailer caravan.

S. L. Rigg, for Broadmeadows
Shire Council.

QUEENSLAND

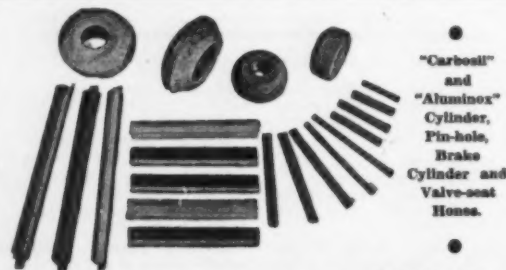
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Stewarts & Lloyds Ltd.; 6,000 ft.,
2,000 lbs., £377. Metal Agencies.
Diesel bus bodies, 30, £56,250.
Athol Hedges Pty. Ltd.

Air brake equip, for drop-centre
trancars, 50 sets, £22,483. McKen-
zie & Holland (Aust.) Pty. Ltd.

North-west 25 shovel dragline
and crane, £8,662; Barber Greene
ditcher, £4,500. Heavy Equipment
Pty. Ltd.

Lightning arresters, American,
300, £3,750. Evans Deakin & Co.;
Swedish, 50, £445. Intercolonial
Boring Co. Ltd.; English, 50, £465.
Johnson & Phillips.



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Primer paint, 40 gals., £11/15/-; pipe enamel, melting point (B. & R.), 170 deg. F., 56 tons, £1,221. Albion Quarrying Co. Pty. Ltd.

Sluice valves, low pressure, 36 in., four, £2,730. Great Northern Trading Co.; sluice valves, high pressure, 30 in. dia., four, £3,100. A. Sargeant & Co. Pty. Ltd. Pumps, motors and control equipment, £1,271. Thompsons (Castlemaine) Ltd.

MISCELLANEOUS.

Crushing plant, £22,016. Norton Toothill & Co. Pty. Ltd., for Ipe-wich City Council.

Caterpillar No. 12 grader, £7,168. Waugh & Josephson Pty. Ltd., for Herberton Shire Council.

End loader, min. cap. 1 cu. yd., £3,970. U.K. & Dominion Motors, for Kilcoy Shire Council.

Tractor loader, £4,715. G. R. & N. C. Milliken; caravans, £255. Spring Service and General Engineering, for Warroo Shire Council.

Tip truck, 3-4 yd. cap., with hydraulic hoist, £1,174. Clyde McCosker; farm tractor, with equip., £750. Queensland Fruitgrowers' Co-operative Society Ltd., for Stanthorpe Shire Council.

Construction and erection of 120 m. power transmission system between Kingaroy and Maryborough, £16,237. Underwood Battery and Electric Co., for South Burnett Regional Electricity Board.

Ripper, 3 tyns, for work with D4 Caterpillar tractor, £500. Powkes,

Round and Murchie, for Tiaro Shire Council.

WEST AUSTRALIA

TENDER BOARD.

Calorifier, 250 gal., £184. Boltons Pty. Ltd.

Backbreaker, 3 tons, £240. Hawke & Co.

Loudspeaker system, £148. Atkins (W.A.) Ltd.

Air compressor unit, portable, and rock drill, item 1, £1,200. Southern Cross Windmill; item 2, £100. George Moss.

Impulse timer and combination meter, item 1, £398. Watson, Victor; item 2, £46. S. Van Dal.

X-ray equip., at rates. Philips Electrical Industries.

Railway wagons, item 1, under-frames, £370 ea.; bodies, £385 ea.; tooling, £7,313. Hoskins Engineering; item 2, £1,057. Tomlinson Steel Pty. Ltd.; item 4, £1,057. Knox, Schlapp; item 5, under-carriages, £215 stg. ea.; bodies, £231 ea. K. L. Distributors; item 6, £1,437. Commonwealth Engineering; item 15, alternative "C", £455 stg. ea. Flower Davies & Johnson.

NEW ZEALAND

MISCELLANEOUS.

Metalclad d.c. switchgear, £1,798. British General Electric Co. Ltd., for Auckland Harbour Board.

J. Gadsden Pty. Ltd.

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Old. Rep.: T. H. Martin & Co., Wilson House, 35 Charlotte St., Bris.
Victorian Rep.: A. E. Acland Pty. Ltd., 406-414 P.O. Pl., Melb
W.A. Rep.: Radio and Associated Industries Pty. Ltd., 37 King
St., Perth.
S.A. Rep.: Parsons & Robertson Ltd., 172-174 Pultenay St., Adel.

CURRENT TENDERS

NEW TENDERS

The following tenders have been called since our last issue. Current tenders which have been published in previous issues follow this section.

COMMONWEALTH

DEPARTMENT OF CIVIL AVIATION.

Mobile Elevating Platform Trucks (Sch. 328). Extended to March 6.

DEPARTMENT OF WORKS AND HOUSING.

Effluent Pumps, Supply and install at Byford Naval Armament Depot. Feb. 20.

Pre-assembled Wiring Units (500), for Prefabricated Houses, Canberra. March 6.

Set of Duplex Dry Basin Type Sewage Ejector Pump, for Dandenong. Feb. 27.

DEPARTMENT OF SUPPLY.

Ammunition Containers. Feb. 22.

POSTMASTER-GENERAL'S DEPARTMENT.

Outdoor Distributing Wire. (Sch. C.6491). Extended to March 1.

Teleprinter Switchboard Equipment (Sch. C.6528). Feb. 22.

SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION.

Chaffcutter and Auxiliary Equipment (Spec. 219). Feb. 23.

Generating Set, Petrol, Electric, 40 K.V.A. (Spec. 218). Feb. 23.

NEW SOUTH WALES

DEPARTMENT OF PUBLIC WORKS.

Cafe Unit; Sink Heater; Multi-point Heaters (all gas heated). March 7.

Cold Water Pumping Plant. March 7.

Heating and Domestic Hot-water Systems, for Berrima District Hospital. Feb. 26.

Heavy Duty Earth Rippers (2). Feb. 23.

Overhead Travelling Crane, (11 ton). Feb. 28.

Steam Raising Equipment, Stock and Auxiliaries, for Cooma District Hospital. Feb. 26.

Storage Cabinet, Ice Cream. March 7.

DEPARTMENT OF SUPPLY.

Bronze Propellers. Feb. 20.

Fibreglass Blanket, 9,300 sq. ft. of 1 in. Feb. 20.

Fork Lift Trucks (12). Feb. 27.

Greaseproof Paper Bags and Brown Paper. Feb. 20.

(Turn to page 79.)

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NEW TENDERS - Contd.

M T Wheel Equipment. Feb. 27.
Oils and Greases, for Dept. of Army. Feb. 22.

GOVERNMENT RAILWAYS DEPARTMENT.

Centre Lathes, Centre Height 8½ in. to 9 in. Sliding, Surfacing and Screw-cutting Type (CE-10139). April 2.

Crawler Mounted Diesel Tractors, with Dozer Equipment, etc. (CE-6536). Feb. 21.

Electric Concrete Mixers, 1 cub. yd. (CE-10155). April 3.

Electric Overhead Travelling Crane (100-ton), for Main Workshop at Strathfield. March 28.

Hydraulic Press, for Removing Tyres (CE-6342). Feb. 20.

Locomotive Boilers, C36/35 (25), Working Pressure, 200 lbs. per sq. in. (Spec. 2217). Extended to Feb. 28.

METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD.

Horizontal Spindle Centrifugal Type Sewage Pumping Units, Electrically Driven (2). (Contract 2973). April 10.

M. S. Plates—approx. 550 tons and 25 tons of Structural Steel Sections (Job 2465). Extended to March 6.

STATE CONTRACTS CONTROL BOARD.

Amplifying Unit, Portable. Feb. 19.

♦ ♦ SEE ALSO ♦ ♦ "LATE OPEN TENDERS"

Battery Chargers. Feb. 19.
Draftsmen's and Surveyor's Instruments. Feb. 27.

Electric Cables, Wire and Flex, Radio Parts. Feb. 28.

Electrical Washing Machines. Feb. 19.

Engineer's Machinery. Feb. 19.

Refrigerator Unit. Feb. 19.

Transformers. Feb. 20.

Tools. Feb. 19.

SYDNEY COUNTY COUNCIL.

Aerial Service Cable during period 1st July, 1951, to 30th June, 1952 (Spec. 1510). March 15.

Base Exchange Raw Water Softener, for Evaporator Plant, Bunnerong "B" Power Station (Spec. 1528). March 15.

Hard Drawn Bare Copper Cable and Copper Wires during period 1st July, 1951, to 30th June, 1952.

March 15.

Rubber Insulated Cables during the period 1st July, 1951, to 30th June, 1952 (Spec. 1509). March 15.

Turbine Diaphragms, for Bunnerong "A" Power Station (Spec. 1529). March 15.

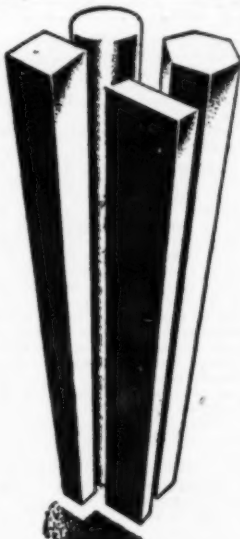
Turbine Blading, for Fyrmont "A" Power Station (Spec. 1530). March 15.

MISCELLANEOUS.

Air Compressor, capable of operating one Jackhammer; Small

Tractor, about 8 to 15 H.P., fitted with Dozer Blade; Four-berth Caravans (2), for Shire of Abercrombie. March 5.

Filtration and Circulating Plant, for Narrabri Municipal Council. Feb. 20.



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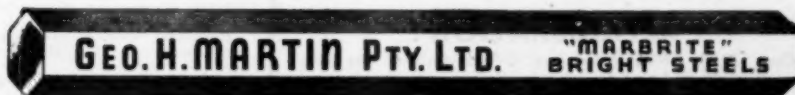
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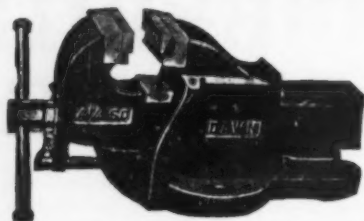
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(Turn to page 89.)

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tors and Shades; Electrical Accessories; Conduit Pipe and Fittings; Electrodes and Welding Wire; Welding Fittings, two years' supply from 1/7/51 to 30/6/58. Closes Feb. 21.

Front End Loader (Contract 58688). March 14.

Uniform Buttons, Linings, etc.; Serge, Twill, etc.; Uniform Clothing; Khaki and Navy Blue Drill Tunics; Antimony, Lead, etc.; Brass Products; Copper Products; Malleable Iron Castings; Carbon Steel Castings; Steel Tyres; Automatic Couplers and Parts; Friction Draft Gears; Rolled Steel; Explosives; Tin Plate; Brake Hose Pipes; India-rubber Hose; Rubber Belting; India-rubber Goods, various; Packing; Steel Rails and Fish Plates; Enamelled Station Nameplates; Westinghouse Brake Parts, two years' supply from 1/7/51 to 30/6/58. Closes Feb. 28.

Utility Truck, Road Motor (Contract 58691). March 7.

CITY OF MELBOURNE.

Oil-burning Equipment, Supply and Installation. Feb. 20.

Tipping Truck, 21-3 ton. Feb. 22.

MELBOURNE AND METROPOLITAN TRAMWAYS BOARD.

Motor Spare Parts for Buses (Sch. Nos. 130 to 131). Feb. 26.

DEPARTMENT OF SUPPLY.

Navigation Log Covers. Feb. 23.

Portable Ventilating Fans. March 1.

Trailer Parts. Feb. 20.

DEPARTMENT OF PUBLIC WORKS.

Air-conditioning Equipment, for Geelong. Feb. 27.

Briquette Hot-water Service, for Carlton. Feb. 27.

Refrigerators, for Cafeteria at Warrnambool. Feb. 20.

MELBOURNE AND METROPOLITAN BOARD OF WORKS.

Water Meters, 2 in. (5000), with movable shutters. Feb. 27.

STATE ELECTRICITY COMMISSION.

Galvanised Steelwork, for Transmission Lines (Spec. 50-51/256). March 7.

Horizontal Centrifugal Pumps, for Kiewa (Spec. 50-51/264). March 14.

Lathes, for Central Base Workshops (Spec. 50-51/266). March 21.

Rock Crushing and Screening Plant (Spec. 50-51/243). March 21.

Sawmill Plant, for Yallourn Area (Spec. 50-51/267). March 21.

Static Rectifier Plant, 11,000 volt. (Spec. 50-51/261). May 2.

Steel Cored Aluminium Conductor. Extended to March 14.

MISCELLANEOUS.

Steel Lockers (100). Supply and installation at Municipal Baths,

(Turn to page 81.)

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NEW TENDERS — Contd.

North Fitzroy; Motor Scythe, for City of Fitzroy. Feb. 26.

CURRENT TENDERS

The following tenders have appeared in previous issues and are still current.

COMMONWEALTH

POSTMASTER-GENERAL'S DEPARTMENT.

Communication System between Sydney and Melbourne (Spec. C-6157). Extended to April 17, 1951.
Electroplating Equipment (Sch. V.454). Feb. 20.
F.M. Radio Link Equipment, Portable (Sch. C.6494). March 6.
Kneeling Pads, Jointers' (Sch. C.6510). Feb. 22.
Labels, for Mail Bags (Sch. C-6505). March 6.
Letter Receivers (Sch. C.6504). Feb. 20.
Light and Power Material (Sch. C.6506). Feb. 27.
Mechanics' Tools, Hammers, Files, Hacksaws, Drills, etc. (Sch. C.6496). Mar. 1.
Mirrors and Cases, for Cable Joiners (Sch. C.6514). March 1.
Physical Programme Line Equipment (Sch. C.6495). April 24.

Printed Forms, Registration Series (Sch. C.6515). Feb. 20.
Relays, 600 Type (Sch. C.6508). Feb. 22.
Relays, 3000 Type (Sch. C.6499). April 5.
Tools, Leadworking and Measuring, etc. (Sch. C.6512). April 3.

AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION.

Air Compressors (2), 500 C.F.M., and One Diesel Engine (Spec. M.40). Feb. 26.
Aluminium Busbar, 549 tons (Spec. E.36). Feb. 19.
Coke Calciners, Rotary 15-ton-per day (M.35). Extended to Feb. 26.
Galvanised Steel Framed Windows and Louvers, etc. (Spec. C-10). March 12.
Gear Boxes (292), Bevel Gears (1,168), Ball Bearing Pedestals (1,168), C.I. Rope Sheaves, Shafting, etc. (799), for use as Anode Suspension Gear (Spec. M.41). Feb. 26.
Laboratory Equipment, including 1-1 ton Crusher, 3 only Vacuum Pumps, Furnace, Copper Flasks, Aperiodic Reflecting Balance, and Miscellaneous Items (Spec. M.44). March 12.
Plain (Slip) Conduit and Grip Fittings (Spec. E.35). Feb. 19.
Rotary Screen (9 ft. x 4 ft. dia.), for Alumina (Spec. M.42). Feb. 28.
Screwed Conduit and Fittings (Spec. E.34). Feb. 19.
Vehicle Battery Chargers (7) (Spec. E.32). Feb. 19.

(Turn to page 82.)



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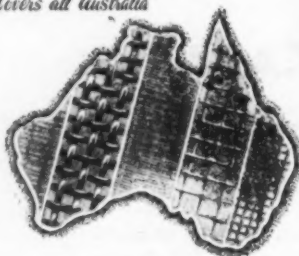
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CURRENT TENDERS — contd

Worm Conveyor, for Alumina, 14
in. dia., 18 ft. long, Ribbon Type,
Water Jacketed (2) (Spec. M.43).
Feb. 28.

GOVERNMENT RAILWAYS DEPARTMENT.

Concrete Mixers. Feb. 20.
Portable Belt Loader. Feb. 20.

DEPARTMENT OF CIVIL AVIATION.

Constant Current Regulators,
Static Core Type (Sch. 324). March
6.
Hammock Stretchers, Neil-
Robertson Type (Sch. 329). March
6.
Insulated Copper Winding, Re-
sistance and Fuse Wires (Sch.
328). April 3.
Underground Cable, 1,000 Volt
Grade (Sch. 325). Feb. 27.

DEPARTMENT OF SUPPLY.

A/T Equipment—Wireless Trans-
mitters. Feb. 22.
Universal Testing Machine and
Equipment. Feb. 27.

DEPARTMENT OF WORKS AND HOUSING.

Aluminium Window Frames,
Sashes, etc., Supply and fix, for
Administrative Offices Building,
A.C.T. Feb. 20.
Bain Maries and Hot Presses
(2), for Flinders. Feb. 27.
Coal Handling Plant for Heidel-
berg. Feb. 20.
Fire Sprinkler System, Auto-
matic, for Northcote. Feb. 20.
Fire Sprinkler System, Auto-
matic; Storage Reservoir; Booster
Pump, for Laverton. Feb. 20.
Garment Press, Fully Automatic
Twin Rotary Type, for Canberra
Community Hospital, A.C.T. Feb.
20.
Jacketed Pans (2), for Parkville
Feb. 20.
Mobile Oil Fired Heater of Bitu-
minous and Tarry Substances
(Cap. 750 gals.), to Kingsford
Smith Airport, Mascot. Feb. 20.
Rotary Clothes Hoists (200), for
Canberra. Feb. 20.

Strong-room and Fireproof
Doors, etc., for Administrative
Offices Building, Canberra. Feb.
20.
Switchgear—11 K.V. for Power
Station, Canberra. Mar. 13.

STATES

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT.

Circuit Breakers—1500-volt High-
speed, Complete with Control
Equipment to (Spec. 1281), 8 Units
for Bondi Junction Sub-station, 2
Units for King's Cross Sectioning
Hut, and 4 Units for Erskineville
Sectioning Hut. Feb. 21.

Circuit Breakers — High-speed,
1500-volt, Complete with Control
Equipment, for Western Main Line,
(Spec. 1284). Supply of 185. Mar.
14.

Diesel Engine Trench Ditcher,
cap. 8 ft. x 2 ft. (CE-6283). Feb.
21.

Heavy Chemicals (Sch. 46A);
Firebricks and Clay, for Locomo-
tives and Workshops (Sch. 53);
Firebricks, for Power Stations
(Sch. 53A). Annual Supply from
1st July, 1951, to 30th June, 1952.
Closes Feb. 28.

Insulators, Cylindrical, Pedestal
or Post Type, for 66-KV Outdoor
Circuits (List CE-10,062). Feb. 28.
Rivets, Washers, Screws, Split
Pins, Roofing Bolts and Nuts (Sch.
4); Black Steel Hexagon Head
Metal Thread Screw (Sch. 4a);
Steel (Sch. 22); Glass (Sch. 38);
Photographic Materials (Sch. 39).
Annual Supply from 1st July, 1951,
to 30th June, 1952. Closes Feb. 21.
Rubber Goods (Sch. 30). Annual
Supply from 1st July, 1951, to 30th
June, 1952. Extended to Feb. 21.
Shaping Machine, 24 in. stroke,
heavy duty, with motor and drive
(CE-10108). Feb. 27.

Steam Pipes and Headers for
Lake Macquarie Power Station
(Spec. 1280). Extended to March
7.

Steel (Sch. 22); Glass (Sch. 38);
Photographic Materials (Sch. 39).
Annual Supply from 1st July, 1951,
to 30th June, 1952. Closes Feb.
21.

Supervisory Control Equipment,
for Western Line Electrification
(Spec. 1283). April 11.

Switchgear, Compound - filled,
11,000 Volt., for Martin Place
Sub-station (Spec. 1285). March
28.

Waste Making Machine, suitable
for Teasing Washed Cotton
Waste (CE-10,010). Feb. 27.

DEPARTMENT OF PUBLIC WORKS.

Cabinet, for Treatment of Pre-
mature Infants. Feb. 21.
Card Register, Time Recording
Machine. Feb. 23.

Cement-lined Pipes and Specials,
M.S., Electrically Welded, 9-inch
nominal dia., for Tantaraunglo
Water Supply (Spec. 65/50/51)
Feb. 19.

Electrically Driven Pumping
Plant, for Walcha Water Supply.
Extended to Feb. 19.

Electrically - driven Pumping
Plant, for Dorrigo Water Supply.
Extended to Feb. 19.

Electrically - driven Pumping
Plant (No. 126-49/50), for Walcha
Water Supply, Extended to Feb.
19.

Electrically - driven Sewage
Pumping Plant, for Hay Sewerage
Augmentation (Spec. 45-50/51).
March 19.

Garden Hose, Plastic. Feb. 21.
Photo-Electric Control Relays.
March 14.

Plastic Water Pipe and Fittings.
Feb. 21.

Power Hacksaw Blades. Feb. 23.
Recirculating Pump, Electrically
Driven. March 7.

Septic Tank Effluent Pump.
March 7.

Spanners. Feb. 23.

Terrazzo Slabs. Feb. 23.

Walltiles, Cream Glazed. Feb.
23.

Water Softener. Feb. 28.

(Turn to page 83.)

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CURRENT TENDERS — contd.

DEPARTMENT OF SUPPLY.

General Purpose Vessel (71 ft.). Purchase of, from Garden Island. March 1.

Motor Launch, 37 ft. Purchase of, from Bushcutters Bay. March 1.

Switchboards, for Power Plant. Feb. 27.

METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD.

Concrete Buckets (6) of rated capacity at least 4 cub. yds. (P.T.-382). March 6.

Pneumatic Rock Picks (21), Pneumatic Chipping Hammers (7), Pneumatic Spaders (19), Second-hand Condition, Purchase of (Plant Tender 382). Feb. 27.

STATE CONTRACTS CONTROL BOARD.

Envelopes and Tags. Feb. 20.
Induction Regulator. March 2.
Motor Truck Chassis, including Cab. Feb. 20.
Tipping Truck, 5-ton. Feb. 20.

SYDNEY COUNTY COUNCIL.

Electric Lamps, for Street Lighting and General Purposes during the period, 1st July, 1951, to 30th June, 1952 (Spec. 1512). Feb. 22.
Mobile Testing Equipment, High-voltage (Spec. 1524). April 19.

Overhead Transmission Line (132,000 Volt), Lugarno to Homebush (Spec. 1493). March 15.

Regulating Transformers, for Runnerong Power Station (Spec. 1517). Feb. 22.

Relays and Associated Equipment, for Bushar Protection at Homebush Sub-station (Spec. 1522). April 26.

Switchboards, Low Voltage, and Sub-station Service Panels, for Sub-stations (Spec. 1515). March 8.

Transformer Winding Temperature Indicators (Spec. 1519). April 12.

MISCELLANEOUS.

Gas Holders, High-Pressure (2), cap. 10-15,000 cub. ft., at 55 lb. per sq. inch gauge; Gas Compressor, Electric Motor Driven, complete with necessary accessories and equipment; Gas After-Cooling

Unit, for Municipality of Bega. Feb. 20.

Outdoor Transformers, Up to and including 1500 K.V.A. Capacity—For Electricity Supply Dept. of Newcastle City Council. Feb. 19.

Paper Insulated Lead Covered Unarmoured and Single Wire Armoured Power Cable and Pilot Cables for Working Pressure, for Electric Supply Dept. of Newcastle City Council. Feb. 19.

Tipping Truck, 3-ton, with bottoms and sides sheathed with sheet or galv. iron, for Goulburn City Council. Feb. 21.

Transformer, 750 K.V.A., 33/11 K.V., three-phase, for Bega Valley County Council. March 12.

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

Crane Stay Legs (Contract 58,700). Feb. 21.

Diesel Travelling Cranes, 10-ton (Con. 58,665). March 7.

Mill Brass Cocks. Feb. 21.
Petrol Electric Mobile Cranes, 6-ton. Feb. 21.

CITY OF MELBOURNE.

Hand Power Crane, 3-ton (Spec. 753/E). Feb. 19.

Reflectors, Enamelled Steel Concave, for Street Lighting Units (Spec. 755/E). Feb. 19.

DEPARTMENT OF SUPPLY.

Electric Motor, 4,000 h.p. Feb. 22.

Radar Maintenance Spares. Feb. 22.

Testing Machine and Equipment. Feb. 27.

Wireless Transmitters. Feb. 22.

MELBOURNE AND METROPOLITAN BOARD OF WORKS.

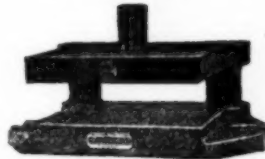
Electric Motors, A.C. (8), up to 125 h.p. Feb. 27.

STATE ELECTRICITY COMMISSION.

Beam Bending and Straightening Machine (Spec. 50-51/248). Feb. 28.

(Turn to page 84.)

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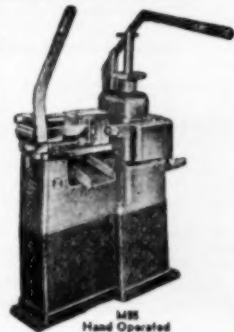
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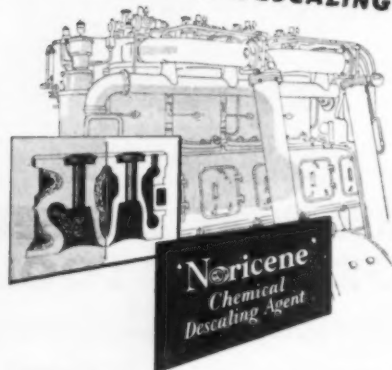
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CURRENT TENDERS — contd.

Conveyors, Slot Bunker, to "B. & C." Boiler House Bunkers, Yallourn (Spec. 50-51/251). March 7.

Drilling and Developing Test Bores, for Morwell (Spec. 50-51/237). Feb. 21.

Drilling Machine, for Yallourn Workshop (Spec. 50-51/240). Feb. 21.

Drilling Machines, for Kiewa (Spec. 50-51/262). March 7.

Fuses, Low Voltage (Spec. 50-51/253). March 21.

Lathes, for Maintenance Workshops at Yallourn (Spec. 50-51/254). March 7.

Pneumatic Power Hammers (Spec. 50-51/260). Feb. 28.

Porcelain Disc Insulators, for Transmission Lines (Spec. 50-51/257). April 4.

Single Ram Hydraulic Press (Spec. 50-51/249). March 7.

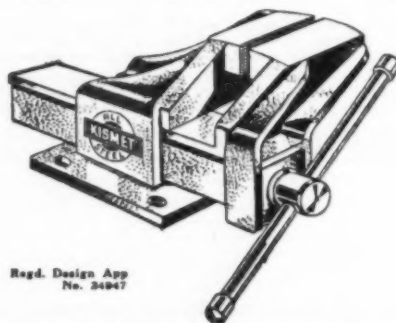


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KISMET ENGINEERING WORKS
BRISBANE

Time Switches (Spec. 50-51/233). March 21.

Tube Bending Machine (Spec. 50-51/234). Feb. 21.

Turbo-Generating Set, Steam, 30,000 K.W. (Spec. 50-51/171). March 28.

STATE RIVERS AND WATER SUPPLY COMMISSION.

Trailers, 4-Wheeled, Pneumatic Tyred (2). Feb. 27.

MISCELLANEOUS.

Tractor, Rubber-tyred, approx. 25 B.H.P., Petrol or Kerosene Driven, for Shire of Patrick Plains. Feb. 20.

QUEENSLAND

BRISBANE CITY COUNCIL.
Potential Transformer Testing Set (one). Feb. 25.

Step Down Transformers (6), 7,500 kVA, 33,000 V. to 11,000 V. (Con. E.1/1951). April 20.

GOVERNMENT RAILWAYS DEPARTMENT.

Fabricated Structural Steel (1,200 tons). March 22.

STATE ELECTRICITY COMMISSION.

Gas Piping and Valves for Gas Producer Plant (Spec. 269). Feb. 21.

(Turn to page 85.)

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CURRENT TENDERS - contd.

Oil Circuit-Breakers, 66kV, for
Sub-Stations (Spec. 218). Feb. 21.
Power House Switchboards
(Spec. 261). March 7.

MISCELLANEOUS.

M.S. Pipes and Fittings, 24 in.
and 18 in., for City of Rockhampton.
Feb. 28.

Steel Pipe Line and Associated
Works for Tully Falls' Hydro Electric
Scheme. July 22.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Bitumen Spraying Plant. Feb.
22.

Bogies, for Railway Wagons.
April 5.

Coal Handling Plant, for E.
Perth Power House. April 19.

Electrical Level Luffing Stiff-
legged Derrick (735a). Mar. 1.

Gas Making and Ancillary
Plant (Sch. 23A, 1951). Sept. 27.

Wafer Meters, 1 in. and 2 in.
(Sch. 11A, 1951). March 15.

NEW ZEALAND

HYDRO ELECTRIC DEPART- MENT.

Auxiliary generating sets, 825
kVA, two (Con. 169). Para. also
Auckland, Christchurch, London,
Paris, Washington, and Montreal.
March 13.

Switchgear and steelwork, 110
kV. (Con. 167, 168). Specs. also
Auckland, Christchurch. March 6.

Accepted Tenders

COMMONWEALTH

DEPARTMENT OF INTERIOR.
Motor Vehicle Registration
Plates, 5,000 pairs. Page Manufac-
turing Co. £750.



80 TON CRANE for Electricity Terminal Station

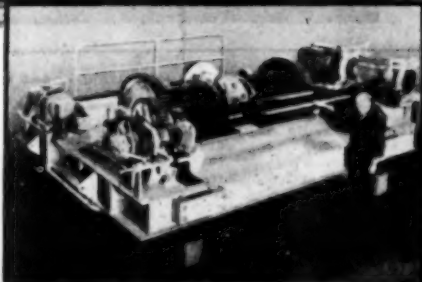


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POSTMASTER-GENERAL'S DEPARTMENT.

Underground Cable (C.5599/
12,473). Austral Standard Cables
Pty. Ltd., £504,882/8/-.

Patent Anchors (C.5708/12,986).
David Shearer Ltd., £402/2/4.

Maintenance Parts, 2000 type (C-
4948/13,785). British Automatic
Telephone & Electric Pty. Ltd.,
£588/14/2.

Trunk Type Cable (C.5978/
14,212). Austral Standard Cables
Pty. Ltd., £1,572/8/8.

Carrier Telephone Equipment
(C.5978/14,212). Standard Tele-
phones & Cables Pty. Ltd.,
£259,139/5/9.

Gas Pressure Alarm System
Components (C.6042/14,154). The
Precision Eng. Co. Pty. Ltd.,
£600.

Fork Lift Trucks and Accessories.
Lawton Industrial Trucks Ltd.,
£2,464/12/6.

Solder (C.6194/14,704). J. B.
Kendall Pty. Ltd., £5,367/10/-.

Multi Coin Attachments and
Parts (C.5981/14,889). Hall Tele-
phone Accessories Ltd., £900/6/-.

(Turn to page 86.)

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Accepted Tenders—Continued

Telegraph Paper Tape (C.6138/15.108). Waterlow & Sons Ltd., £3,646/10/-.

Arm Braces and Combiners (C.6048/15.151). Atlas Eng. Co. Pty. Ltd., £4,473/10/10.

Locks and Keys (C.6280/15.275). J. Hubball Pty. Ltd., £268/2/6.

Refrigerators, for Camping Parties (C.6264/15.342). Howards Ltd., £1,020/10/-.

Picture Telegraph Equipment—Muirhead Jarvis (S.50/1171/1,677). Watson Victor Ltd., £7,007/1/-.

Spanners (C.6213/15.685). Bren Manufacturing Co. Ltd., £799/8/3.

Tools, Hammers, Files, Drills, etc. (C.6228/15.687-9). Wm. Adams & Co. Ltd., £303/2/11; Eagle & Globe Steel Co. Ltd., £254/5/-; and F. B. Lipmann & Son, £435/16/-.

Brass Sheet (C.6371/15.689). Austral Bronze Co. Pty. Ltd., £487/18/8.

Manhole Covers and Frames (C.6261/15.698-701). Bundaberg Metal Industries Pty. Ltd., £15,171/13/4; Miller Bros. Ironworks Ltd., £5,454/3/4; Podmore & Roberts,

£10,406/5/-; and C. G. Greedy & Co., £10,406/5/-.

Paper Jointing Sleeves (C.6331/15.714). Goddard Products Pty. Ltd., £2,922/3/2.

Pole Caps (C.6335/15.715-6). Federal Tinware Mfg. Pty. Ltd., £3,243; and Malles Ltd., £3,626/17/1.

Leadworking Tools (C.6246/15.725). Briscoe & Co. Ltd., £1,479/16/3.

Pole Trailers, 1 ton capacity. Whittinglowe Engineers Ltd., £7,265/12/-.

Corrugated Cardboard Cartons (C.6362/15.728). Shovelton & Storey, £422/12/3.

Amplifiers, for Broadcasting Purposes (C.6069/15.737). Trimax Transformers, £13,733/12/3.

Maintenance Parts (C.6218/15.761). Automatic Electric Telephones Ltd., £21,588.875.

Mild Steel (S.49/677/15,563). J. Gunton (A.) Pty. Ltd., £14,664/18/4.

Manhole Covers and Frames (C.6261/15.564). Gatic (A.) Pty. Ltd., £972.

Printed Forms, Air Mail Labels (C.6461/15.586). Andrew Jack, Dyson & Co. Pty. Ltd., £767/12/7.

Metal Working, Grinding and Cut-off Wheels, Oil Stones, etc. (C.6295/15.623). Union Abrasives Pty. Ltd., £514/18/4; Eliza Tinsley Pty. Ltd., £563/13/6; McPherson's Ltd., £266/1/6.

Bolts, Nuts and Washers (C.5997/15.643-9). Lysaght's Works Pty. Ltd., £447/12/6; F. W. Green & Co. Pty. Ltd., £9,674; M. I. Lissauer, £327/12/11; Servus Forging Co. Pty. Ltd., £15,477/16/11; J. Todd & Son Ltd., £4,638/3/11; A. Simpson & Son Ltd., £4,638/2/6; and Port Adelaide Implement Works Ltd., £6,891/16/10.

Manhole Guards and Tent Frames (C.6216/15,654-8). A. Simpson & Son Ltd., £1,372/6/9; Stewarts & Lloyds (A.) Pty. Ltd., £378/6/8; Progress Engineering Co. Pty. Ltd., £3,166; Hardware Co. of Aust. Pty. Ltd., £825/13/9.

Relay Sets (C.6197/15,674). Thom & Smith Ltd., £25,253/12/10; and Standard Telephones & Cables Pty. Ltd., £8,097/14/3.

Compressed Gas Equipment (C.6405/15,761). J. Hanby, £1,823/10/-; and C.I.G. (Vic.) Pty. Ltd., £4,050/4/3.

Cable Terminal Pillars (S.49-1774/15,780). James Hardie & Co. Pty. Ltd., £345/3/8.

Bunch Shaping Machine (V.390/1710). Electronic Industries Imports Pty. Ltd., £1,407/11/-.

Electric Clocks (V.352/1715). British General Electric Co. Pty. Ltd., £283/13/9.

Steel Letter Delivery Lists and Parcel Cupboards. (V.335/1716). Wharlington Bros., £1,158/10/-.

Technicians' and Office Stools. C. F. Rojo & Sons Pty. Ltd., £441/15/-; and Johnston's Pty. Ltd., £543/8/-.

Power Board Fittings (V.361/1719-3). Victorian Meter Lab., £920/11/9; H. Rowe & Co. Pty. Ltd., £365/11/5; British General Electric Co. Pty. Ltd., £964/15/-; Johnson & Phillips Ltd., £779/14/-; and Louis A. Pgonowski Pty. Ltd., £700.

Conduit and Conduit Fittings (V.354/1724). W. J. Cramsie & Co., £315/3/1.

Steel Wire Rope (V.373/1733). James Munday & Co., £387/19/1.

(Turn to page 87.)

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Accepted Tenders—Continued

Bin Store Units (V.392/1735). Johnston's Pty. Ltd., £15,220/6/3.
Maintenance Parts, for Caterpillar D.7 Tractor (V.392/1736). William Adams & Co. Ltd., £566/9/2.

Wheeler Bins (V.395/1738). Arnbro Products, £344/10/-.

Machines, for Departmental Workshops (Q.108/212). Butler Bros. (A.) Ltd., £283.

Machines, for Departmental Workshops (Q.106/216). Queensland Machinery Co. Ltd., £1,776.

Scrap Wire (S.A.964/221). Metal Manufacturers Ltd., £1,794/16/8.

Hand Operated Turret Punch Press (S.A.960/224). Gilbert Lodge & Co. Ltd., £826.

Hydrometers and Thermometers (C.6123/14,620). J. H. Collie & Co. Ltd., £220/1/8 sterling.

Fork Lift Trucks and Accessories (C.6162/14,704). Lawton Industrial Trucks Ltd., £2,470/17/6.

Cable, Switchboard, Lead Covered (C.6012/14,989). A.W.A. Telton Pty. Ltd., £6,208/13/-.

Receiver, Diaphragms (S.49/1689/15,524). General Electric Co. Ltd., £937/10/-.

Lubricating Oil, for National Broadcasting Stations (C.6399/15,703). H. C. Sleigh Ltd. Rates.

Printed Departmental Headed Paper (C.6457/15,729). Andrew Jack, Dyson & Co. Pty. Ltd., £1,501/6/10.

Routine Testing Equipment (C.6281/15,732). University Graham Instrument Co., £3,346/16/-.

Routine Testing Equipment (C.6281/15,733). British Automatic Telephone & Electric Co. Ltd., £1,609/10/-.

Routine Testing Equipment (C.6281/15,734). Ericsson Telephones Ltd., £14,457/10/-.

Mild Steel (C.6281/15,736). Standard Telephones & Cables Pty. Ltd., £3,471.

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Mild Steel (C.6345/15,743). Blandy Bros. & Co. Ltd. (London), £37,734/7/6 sterling.

Mild Steel (C.6345/1544). F. W. Green & Co. Pty. Ltd., £23,115 sterling; (C.6345/15,745). E. T. Brown Ltd., £18,668.

Indicators (C.6128 / 15,747). Phoenix Telephone & Electric Works Ltd., £3,880/9/2; (C.6128/15,748). Hall Telephone Accessories Ltd., £1,787/10/- sterling.

Insulators (C.6302/15,750). Andrew Morrow & Co., £1,375; (C.6302/15,751). Kesters Premier Pottery Ltd., £3,498; (C.6302/15,752). Welland Potteries Ltd., £1,333/6/8; (C.6302/15,753). R. Fowler Ltd., £8,287/10/-; (C.6302/15,755). Novex Pty. Ltd., £7,331/5/-; (C.6302/15,756). Crown Crystal Glass Pty. Ltd., £52,243/13/4.

Testing Instruments, Insulation and Resistance Testers (C.6289/15,759). H. Rowe & Co. Pty. Ltd., £11,484/1/6; (C.6289/15,760). Lawrence & Hanson Electrical (Vic.) Pty. Ltd., £589/15/5.

Multi-Channel Radio Telephone Systems, Spare Valves (S.50/1642/15,777). Standard Telephones & Cables Pty. Ltd., £594.

Motor Uniselector and High Speed Relays (S.50/677/15,781). Siemens (Aust.) Pty. Ltd., £1,473/8/6.

Gramophone Equipment (C.6207/15,782). Victor F. Harris, £775.

Gramophone Equipment (C.6207/15,783). Standard Telephones & Cables Pty. Ltd., £871.

Lifting Tools (C.6277/15,790). J. Todd & Son Ltd., £1,250/14/4; (C.6277/15,791). Trehwella Bros. Pty. Ltd., £6,272/16/-.

Distributing Frames and Terminal Equipment (C.6094/15,792). McKenzie & Holland (Aust.) Pty. Ltd., £2,555.

Roller Dampers (C.6440/15,810). Clive Hogbin Pty. Ltd., £215/5/-.

Radio Broadcast Transmitters (C.6389/15,811). Philips Industries of Aust. Pty. Ltd., £29,779.

Mild Steel (C.6345/15,812). Tomasetti & Son Pty. Ltd., £A.10,709/10/7; (C.6345/15,813). F. W. Green & Co. Pty. Ltd., £7,834/3/9; (C.6345/15,814). F. W. Green & Co. Pty. Ltd., £1,225 sterling.

Bolts, Nuts and Washers (C.5997/15,856). Australia - Middle East Trading Co., £13,593/12/2.

(Turn to page 88.)

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Transformer Oil Filtration Plant (V.368/1742). The S.K.F. Ball Bearing Co. (Aust.) Pty. Ltd., £825.

Fram Filters and Kits (V.400/1748). W. L. Ryan Pty. Ltd., £450/13/10.

Conversion of Metal Spindles (V.314/1749). McPherson's Ltd., £203/15/10.

Steel Sorting Presses (V.374/1750). Progress Engineering Co. Pty. Ltd., £381/5/-.

Corrugated Cartons (V.412/1751). Corrugated Fibre Container Pty. Ltd., £608/15/-.

Hook Bolts (—/1753). Commercial Hardware Suppliers Pty. Ltd., £331/5/-.

Rubber Knee Boots (V.382/1756). Australian Rubber Mills Pty. Ltd., £860/7/4.

Scrap Covered Wire, Purchase and removal of (V.404/1757). South Melbourne Scrap Iron Co., £422/10/-.

Car Batteries, Purchase and removal of, Second-hand (V.411/1758). Taylor & Spacey Pty. Ltd., £330.

Packing Cases (V.420/1761). Betts Bros. Pty. Ltd., £1940.

Petrol Operated Power Hammers (V.377/1762). British Standard Machinery Co. Ltd., £585.

Savings Bank Counter Screens (V.415/1763). Fairview Cabinets & Joinery, £453/15/-.

Parcel Mail Opening Pads (V.421/1764). Andrew Jack, Dyson & Co. Pty. Ltd., £379/3/4.

Drain Pipes (V.416/1765). Jolly Products, £5700.

Scrap Mixed Metal, Purchase and removal of (V.410/1766). Ingot Metals Ltd., £3141.

Scrap Copper Wire, Purchase and removal of (V.405/1767). Austral Bronze Co. Pty. Ltd., £11100.

First Aid Equipment (V.388/1769). Elliotts & Australian Drug Pty. Ltd., £727/4/2.

Rotary Hoe (V.426/1773). E. Hanscott & Sons Pty. Ltd., £215.

Wooden Pallets (V.417/1774). William Cook Pty. Ltd., £820.

Survey Equipment (Sch. No. 269). Britalia Trading Co. Ltd., £115/19/8; J. R. Brooking, £293/9/8; E. Esdaille & Sons Pty. Ltd., £258/1/2; N. H. Seward Pty. Ltd., £520/14/4; A. E. Parsons, £106/15/-; Thomas Optical & Scientific Co. Pty. Ltd., £83; J. S. Rob-

ertson (Aust.) Pty. Ltd., £20/16/-; A. G. Barker & Associates, £362.
Office Furniture, for Darwin. N. T. Furnishing Co., £484.

Late Open Tenders

COMMONWEALTH

DEPARTMENT OF WORKS AND HOUSING.

Bedside Rugs. Feb. 27.
Bolts and Nuts, for Erskineville (Quot. W.736). Feb. 20.
Diesel Alternator Sets, 40 KW and 50 KW, Supply and installation. Feb. 27.
Electric Hoist, 2-ton, with Trolley (Quot. W.728). Feb. 19.
Fireside Heaters (34), for Camellia (Quot. W.727). Feb. 19.
Sprinkler and Fire Alarm System, Automatic, for P.M.G. Carpenters' Workshop, at Adelaide. March 6.

DEPARTMENT OF SUPPLY.
Lamps, Bedside Type. Feb. 22.

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT.

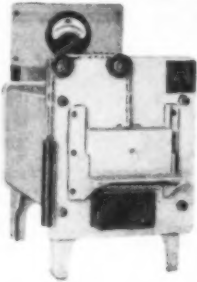
Tools—Axes, Hammers, Vices, etc. (Sch. 5); Shovels, Forks and Spades (Sch. 5a); Twist Drills (Sch. 15); Files (Sch. 16); Heavy Chemicals (Sch. 46a); Firebricks and Clay, for Locomotives and Workshops (Sch. 53); Firebricks, for Power Stations (Sch. 53a). Annual supply from 1st July, 1951, to 30th June, 1952. Closes Feb. 28.

DEPARTMENT OF SUPPLY.
Control Set, for Vortex Tunnels. March 8.
Food Covers (3,000). Feb. 22.
Fork Lift Trucks (5). March 6.
Locks and Keys. Feb. 27.

MISCELLANEOUS.

Light Crawler Tractor, with Angle Dozer Equipment, for Municipality of Lane Cove. March 8.
Metal-clad Switchgear, High Tension, for Municipality of Manly. April 23.

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LATE OPEN TENDERS—Contd.

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

- Electric Signal Lamps. March 7.
Paper, Double Royal Super-calendered. Feb. 21.
Steel Tool Boxes. Feb. 28.

QUEENSLAND

BRISBANE CITY COUNCIL.

- Standard Sanitary Fans (10,000). (Contract H1/1951). Feb. 23.
Underground Cable, Single Core, 11,000 V., F.L.L.C. (Contract E-2/1951). April 6.

SOUTH AUSTRALIA

GOVERNMENT RAILWAYS DEPARTMENT.

- Bogie Ore Waggon (100), 3 ft. 6 in. gauge. April 3.

HARBOURS BOARD

- Cast Steel Cutter and Spare Blades. March 15.
Spare Parts, for Nos. 1 and 6 Dredgers. Feb. 28.

DEPARTMENT OF RAILWAYS— NEW SOUTH WALES.

TENDERS enclosed in sealed envelopes which must be endorsed "TENDER FOR . . .", addressed to the Commissioner for Railways, 19 York Street, Sydney, will be received on the dates and times shown for the service specified. Tenders may be lodged in the Tender Box, Room 504A, 5th Floor, Railway House, 19 York Street, Sydney, or posted to that address.

Wednesday, 21st March—
12 noon.

For the supply and delivery at Telephone and Telegraph Workshops, Wilson Street, Redfern, of one 4-Channel Carrier Telephone System, complete with Repeaters, to Specification No. 85. Copies of Specification (2/6 per copy) and further particulars obtainable from Signal and Telegraph Engineer, Room 806, 19 York Street, Sydney.

Wednesday, 28th March—
12 noon.

For the manufacture, delivery, and erection of one 100-ton (with 10-ton Auxiliary Hoist) Electric Overhead Travelling Crane, for the Main Workshop, New Electrical Depot, Strathfield, Sydney. Specification No. 539, price 5/- per copy, obtainable from Chief Civil Engineer, 1st Floor, 15 York Street, Sydney.

No tenders necessarily accepted. Make cheques payable to Commissioner for Railways. Any tender unaccompanied by deposit, as provided in conditions of contract, may be rejected.

W. A. ANDERSON,
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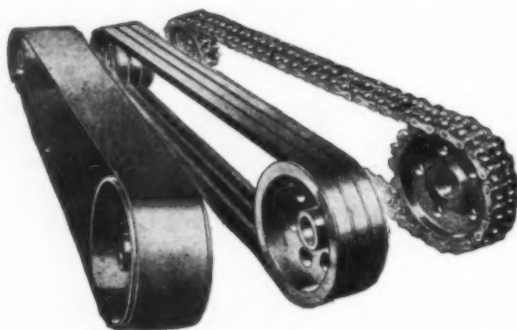
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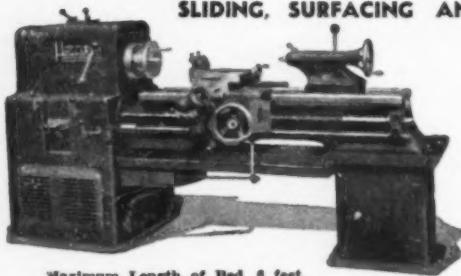
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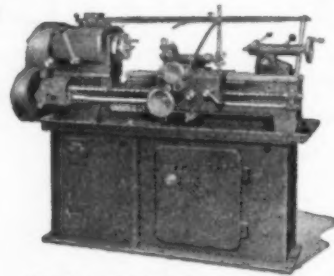
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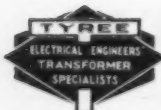
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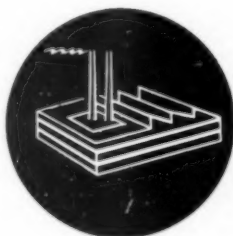


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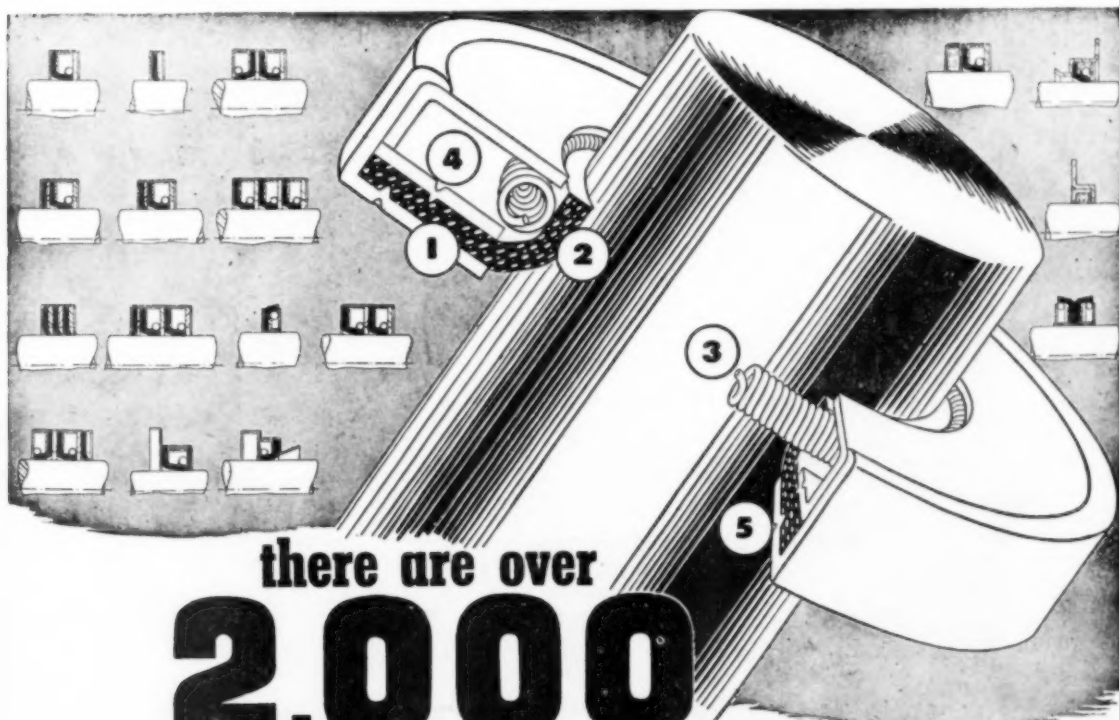
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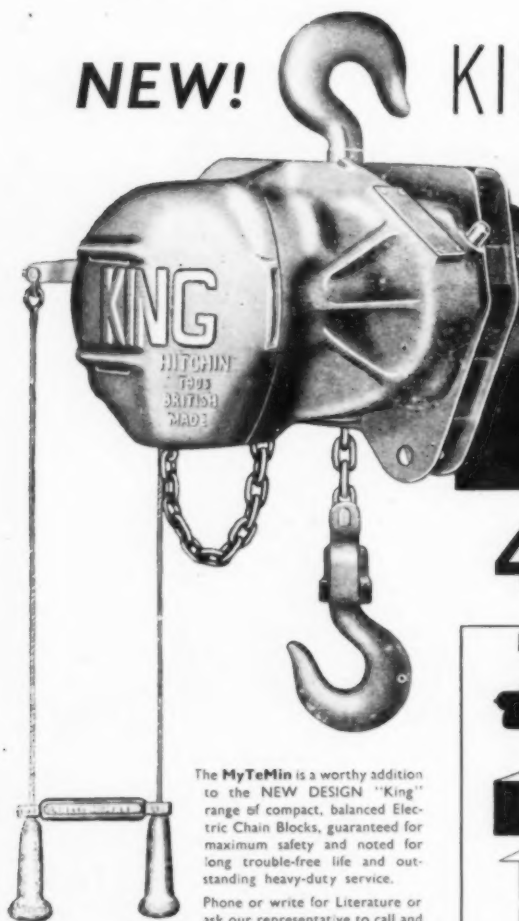
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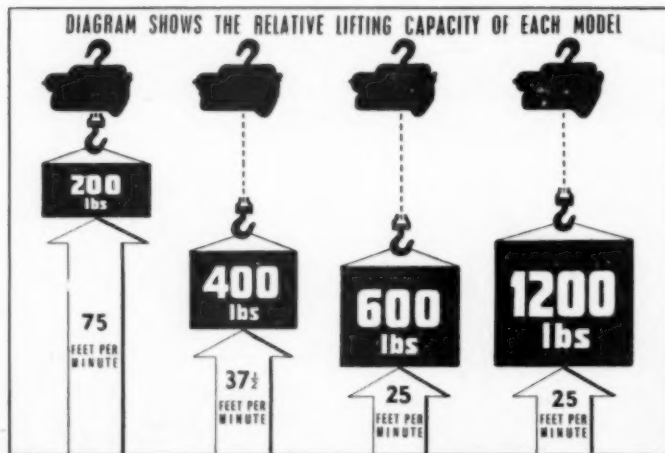
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